

Tools for R&D Professionals

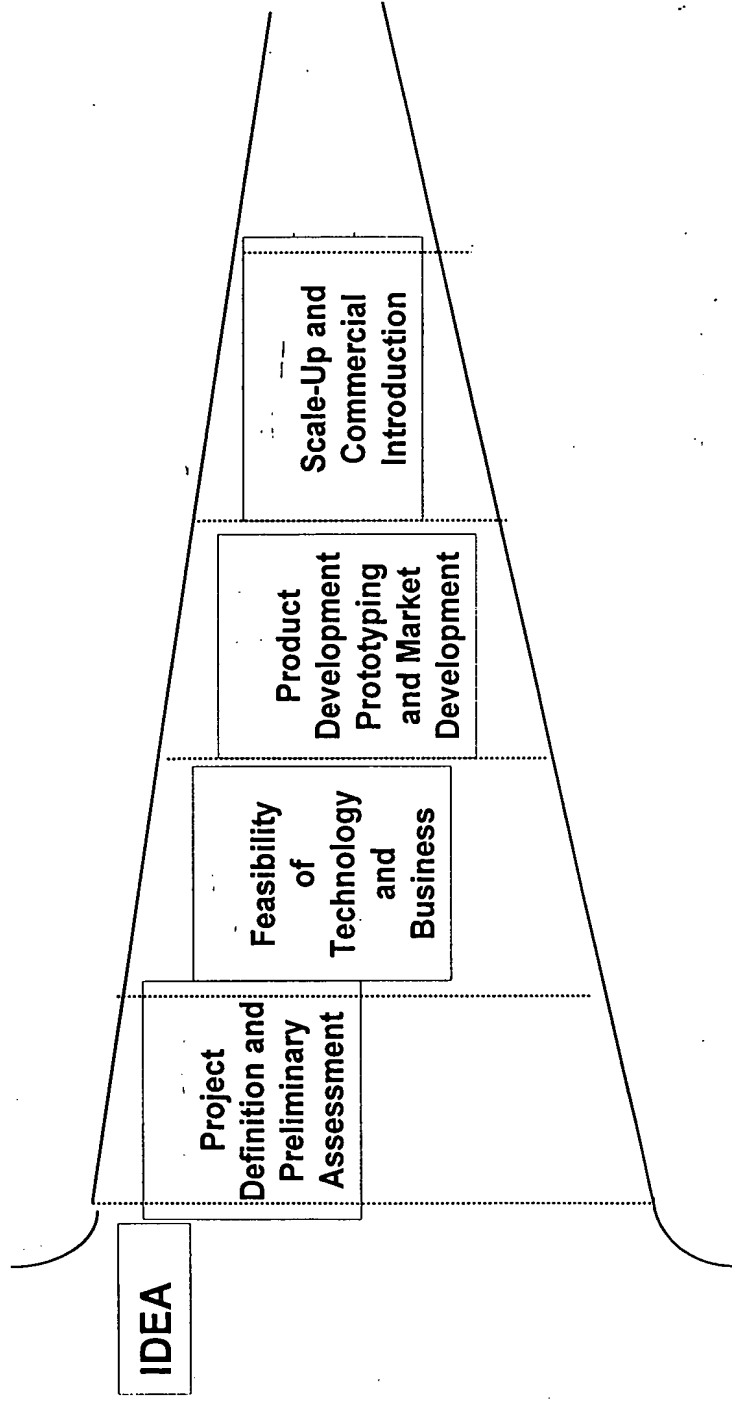


FIG. 1

R&D Tools Map

			Idea	Preliminary Assessment	Feasibility	Development	Scale-up	Portfolio
202 ~	Topographic map	Overall view of related art, uses, competitors	1	10	21	33		51
204 ~	Top Company Table	Ranked List of Companies	2					
206 ~	Top Inventor Table	Ranked List of Inventors	3					
208 ~	Inventors by Company Table	Ranked List of Inventors in each Company		11	22			
210 ~	Features Grouping	Overall view of feature set to offer		12	23	34		
212 ~	Technology classification	Which technical fields produce similar feature sets	4	13	24	35	44	
214 ~	SIC classification	Which market segments can use the product / services		14	25	36		
216 ~	Patent count / year	How fast is product / use technology changing	5					
218 ~	Patent count / year	How fast is project technology changing		15	26	37	45	
220 ~	Application count / year	Which other companies are active in project area		16	27	38	46	
222 ~	Technology by Company map	Technical assessment of serious competitors and partners	6	17	28	39	47	
224 ~	Patent Citation Tree	View of which companies can block and/or circumvent other's patents	7	18	29	40		
226 ~	Nested Patent Citation Tree	Prediction of related technology / markets under exploration	8	19	30	41	48	
228 ~	Product / Patent / Revenue Table	Which products, and their revenue stream size, are protected by patents						52
230 ~	Patent, Months to Issue	How long is typical company & patent office cycle time per field			31	42	49	54
232 ~	Document / Annotation	Immediate, linked, searchable documentation of facts and ideas	9	20	32	43	50	55

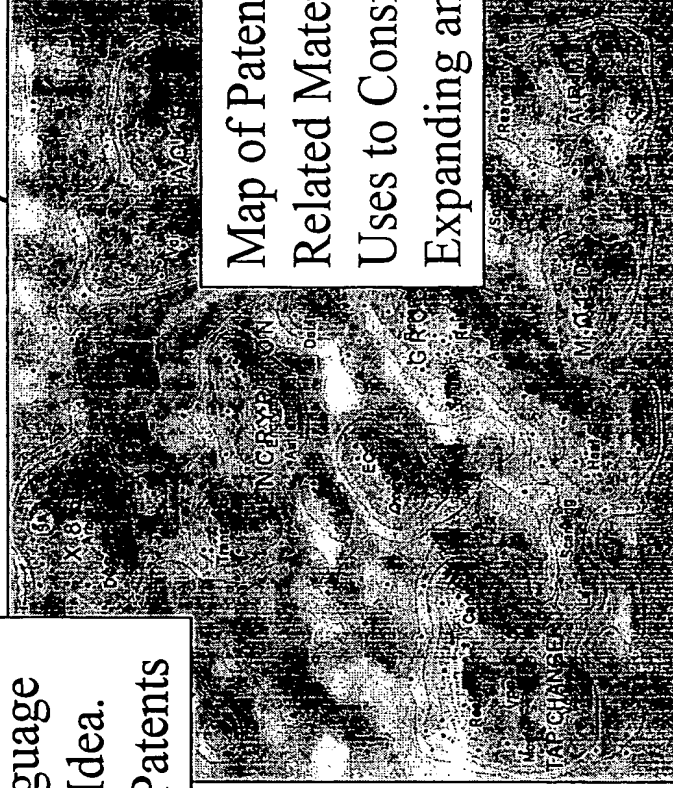
FIG. 2

Tool #1

A Map of Similar Ideas, Art and Markets

Created By: Boolean
and Natural Language
Searches on the Idea.
Group: All US Patents

202



Map of Patent Abstracts Identifies
Related Materials, Processes, and
Uses to Consider When
Expanding and Refining the Idea

Implication: Other People Are Doing Similar Things and Selling Them,
Demonstrating the Idea Is Reasonable From a Technical and Market
Standpoint. The Map Also Allows Sub-groupings for Further Exploration.

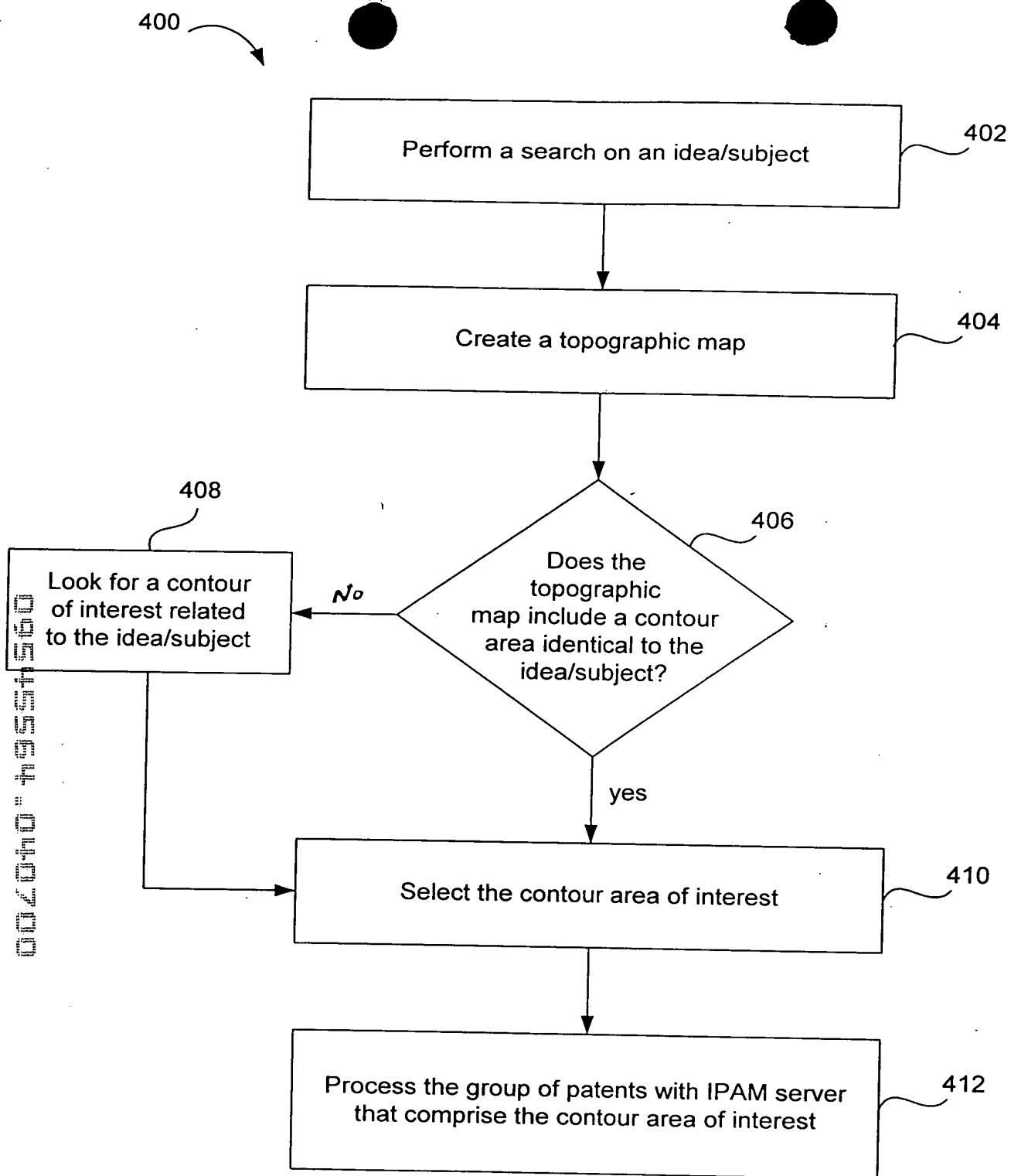


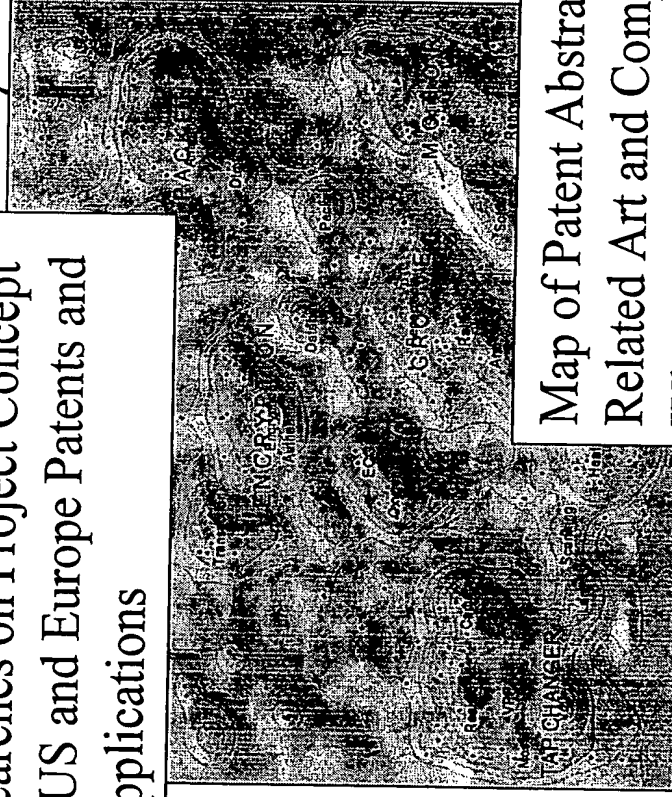
FIG. 4

Tool #10

Map of Similar Technology and Uses

Created by: Boolean and Natural
Language Searches on Project Concept
Group: All US and Europe Patents and
European Applications

202



Map of Patent Abstracts Identifies
Related Art and Companies to Consider
When Initially Assessing the Idea

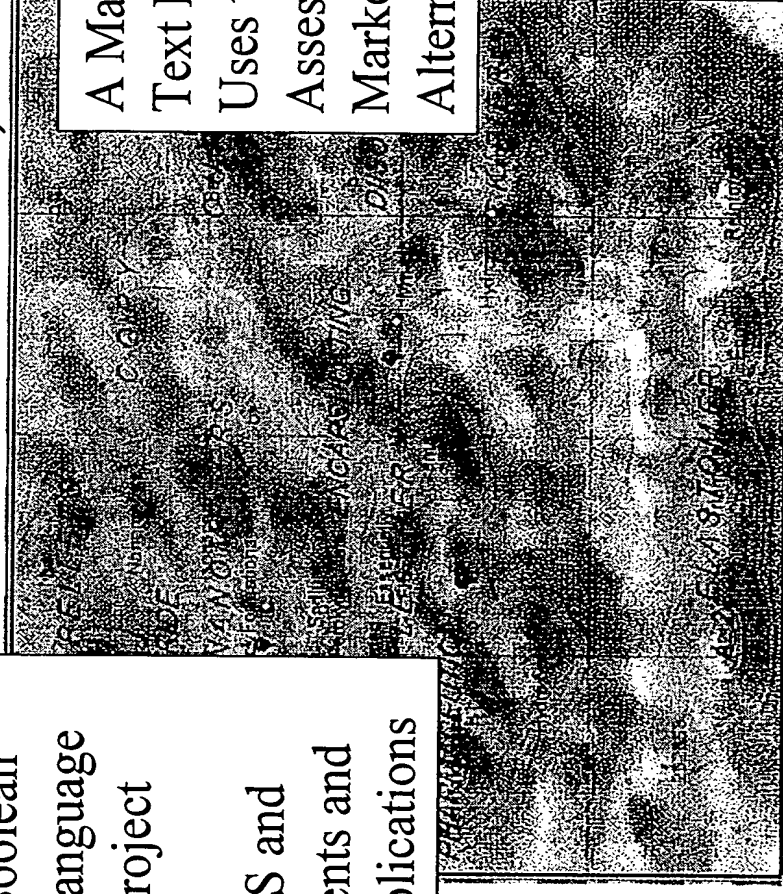
Implication: The Project Team Has a High Level Map of the Project Scope,
Showing the Range of Materials, Processes and Uses to Consider on the Project

A Map of Technology and Uses the Project Team Is Focused on Refining

202
7

Created By: Boolean
and Natural Language
Searches on Project
Concept
Group: All US and
European Patents and
European Applications

A Map of Full Patent
Text Identifies Art and
Uses to Consider When
Assessing Feasibility of
Market and Technical
Alternatives



Implication: The Project Team and Management Have a High Level
Map of Technologies and Markets Which Are Feasible to Explore

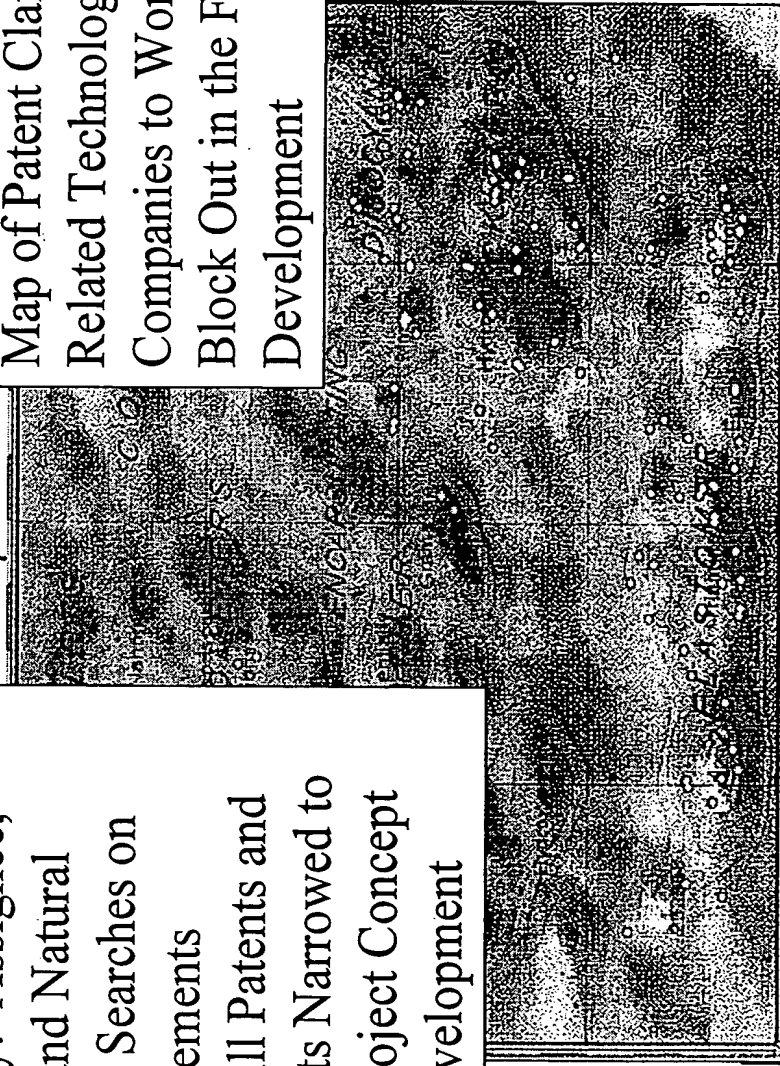
Tool #33

Map of Competitive Technology and Uses

202

Created by: Assignee,
Boolean and Natural
Language Searches on
Project Elements
Group: All Patents and
Documents Narrowed to
Reflect Project Concept
Under Development

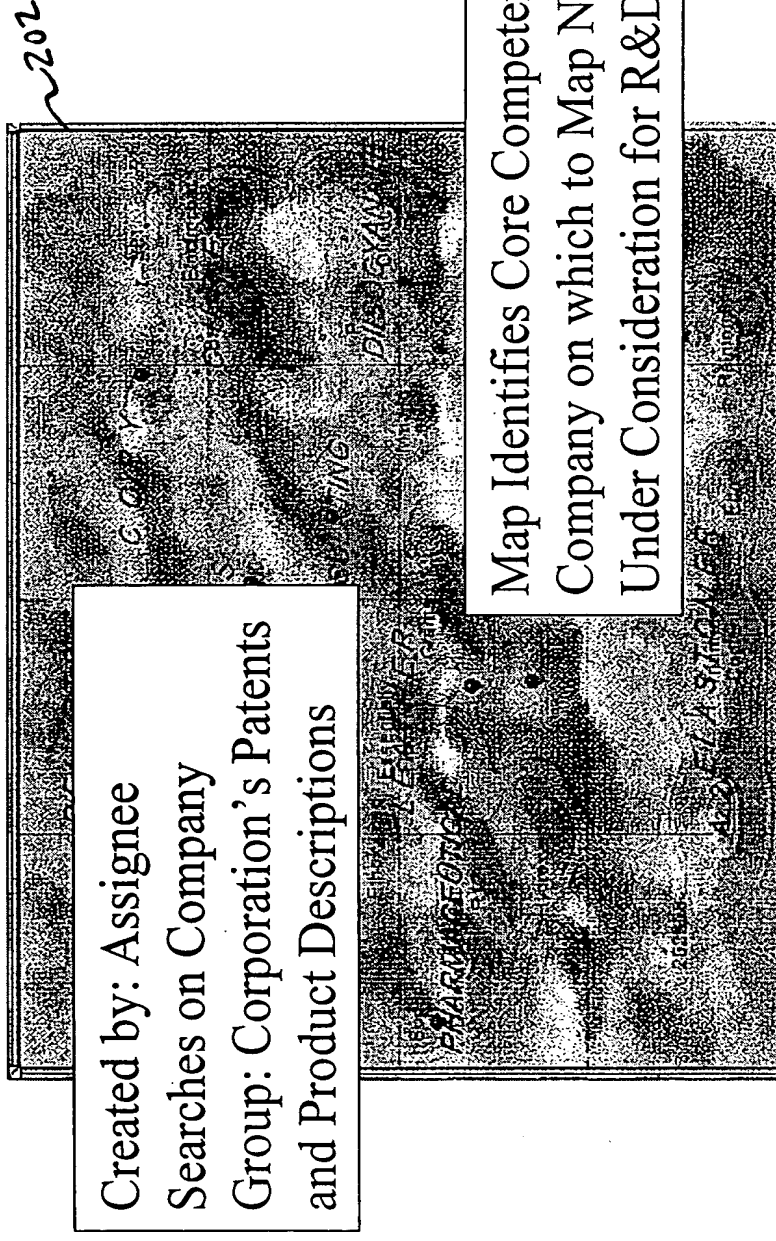
Map of Patent Claims Identifies
Related Technologies and
Companies to Work Around and
Block Out in the Final Stage of
Development



Implication: The Project Team and Management Has a High Level
Map of Technologies and Markets Which Are (1) Under Development
(2) Potentially Competitive

Tool #51

Map of Company Competency & New Projects



A Table of Assignees

Assignee - U.S. Patent Count Report for Microwave Food Heating - US Patents

Assignee	Document Count
Matsushita Electric Industrial Co., Ltd.	81
Raytheon Company	77
General Electric Company	59
	48
	46
	42
	36
	33
	33
	27
	26
	18
	16
	15
	15
	15
	15
	15
	15
	15
	15

Created By: Boolean
and Natural Language
Searches on the Idea.
Group: All US Patents

Table of Assignees Gives New
Ideas on Technology and Markets
to Consider When Expanding and
Refining the Idea

represented by the Secretary of the
Inc.
Amana Refrigeration, Inc.
E. I. Du Pont de Nemours and Company
James River Corporation
Champion International Corporation
E. Khashoggi Industries
Minnesota Mining and Manufacturing Company
The United States of America as represented by the Secretary of the
International Paper Company
Sanyo Electric Co., Ltd.
Andrew Corporation
Daewoo Electronics Co., Ltd.
Golden Valley Microwave Foods, Inc.
International Flavors & Fragrances Inc.
Mobil Oil Corporation
Nabisco Brands, Inc.
The Procter & Gamble Company

Implication: Shows the Quality and Variety of Top Companies Who Are
Also Active in Areas Surrounding the Idea

1000

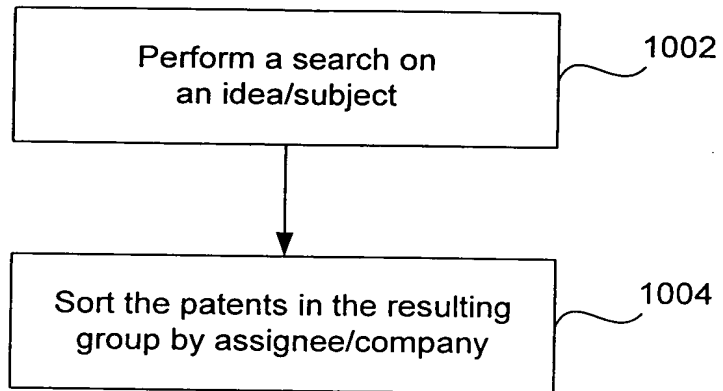


FIG. 10

A Table of Inventors

206

Inventor - U.S. Patent Count Report for Microwave Food Heating - US Patents

Inventor Name	Document Count
Levinson, Melvin L.	21
Hodson, Simon K.	20
	20
	19
	18
	15
	14
	14
	14
	13
	12

Created By: Boolean
and Natural Language
Searches on the Idea.
Group: All US Patents

Table of Inventors Identifies
People Who Have Worked In
This Area on Which to Run
Literature Searches


Kusunoki, Shigeru
Pawlowski, Thomas D.
Seaborn, Jonathan
Lentz, Ronald R.
Simpson, James E.
Watkins, James D.
Byrne, Brian
Dobie, Michael J.
Dudley, Kenneth W.
Fitzmayer, Louis H.
Norris, John R.
Schiffmann, Robert F.
Turpin, Charles H.
Buck, Ronald G.
Colato, Albert E.
Cox, David H.

10
10
10
10
9
9
9

Implication: Shows the Quality and Variety of Top Individuals Who Are
Active in Areas Surrounding the Idea.

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1200 

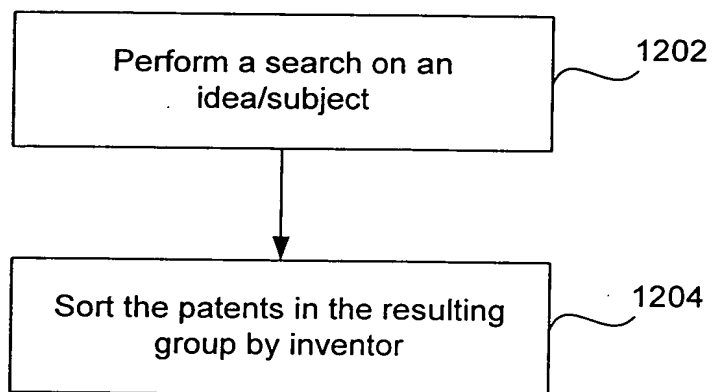


FIG. 12

A Table of Inventors by Assignee

Inventor - U.S. Patent Count by Assignee for Microwave Food Heating - US Patents

Inventor Name	Assignee	Document Count
Levinson, Melvin L.		

Created By: Boolean and Natural Language Searches on the Idea.
Group: All US and European Patents

General Housewares Corporation	20 1 21
E. Khashoggi Industries	17
E. Khashoggi Industries, LLC	2
E. Khashoggi, Industries	1
	20

Patentsmith Corporation
Patentsmith Corporation
Patentsmith II, Inc.
Patentsmith Technology, Ltd.
Smith, Donald P.

Bowen, Robert F.

Raytheon Company

Tanaka, Junzo

Matsushita Electric Industrial Co.

Pesheck, Peter S.

The Pillsbury Company

Brown, Richard K.

James River - Norwalk, Inc.
James River Corporation

Table of Inventors by Assignee
Identifies People Who Have
Worked In This Area on Which
to Run Literature Searches and
Establish Partnership Contacts

Implication: Shows Which Top Individuals, at What Companies, May Be
Resources For The Project Team

1400

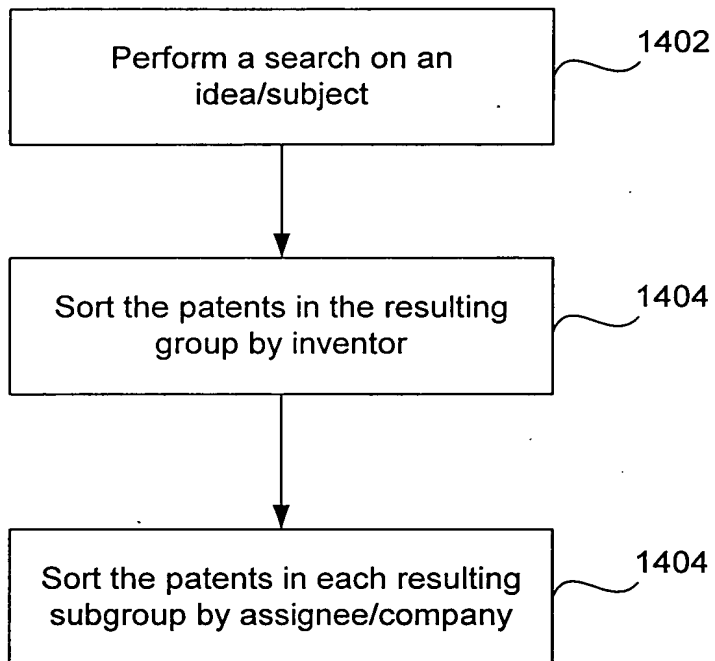


FIG. 14

A Table of Inventors by Assignee

Inventor - U.S. Patent Count by Assignee for Microwave Food Heating - US

Patents

Inventor Name	Assignee	Document Count
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Levinson, Melvin L.

General Housewares Corporation	20 1 21
E. Khashoggi Industries E. Khashoggi Industries, LLC E. Khashoggi Industries	17 2 1 20

Table of Inventors by Assignee
Identifies People Who Have
Worked In This Area on Which
to Run Literature Searches and
Establish Partnership Contacts

Created By: Boolean
and Natural Language
Searches on the Idea.
Group: All US and
European Patents and
European Applications

Bowen, Robert F.

Raytheon Company

Tanaka, Junzo

Matsushita Electric Industrial Co

Pesheck, Peter S.

The Pillsbury Company

Brown, Richard K.

James River - Norwalk, Inc.
James River Corporation

Implication: Shows Which Individuals May Be Resources For The
Project Team, and Which to Commence Competitive Intelligence

Tool #12

Groupings of Proposed Product Features

~210

Created by: Product Attributes
Which Are Sorted and Grouped
Groups: Corporate and Patent
Documents

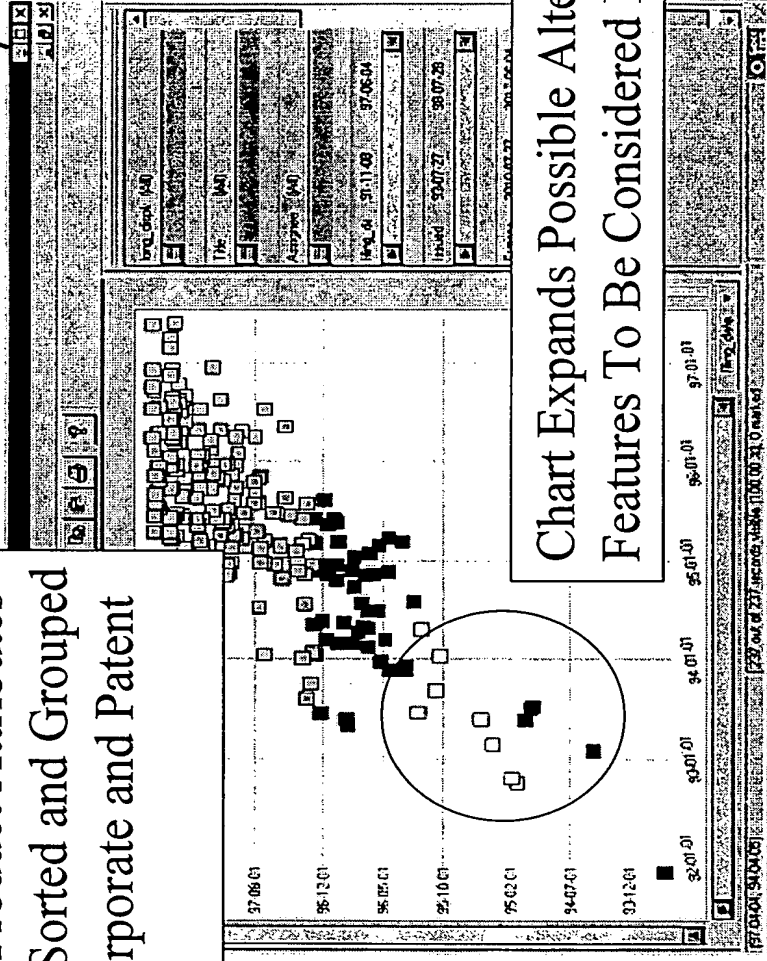


Chart Expands Possible Alternative Customer
Features To Be Considered By Project Team

Implication: Distinctive and Sometimes Known Product
Feature Sets Are Uncovered Early in Project

002040-1954560

1700

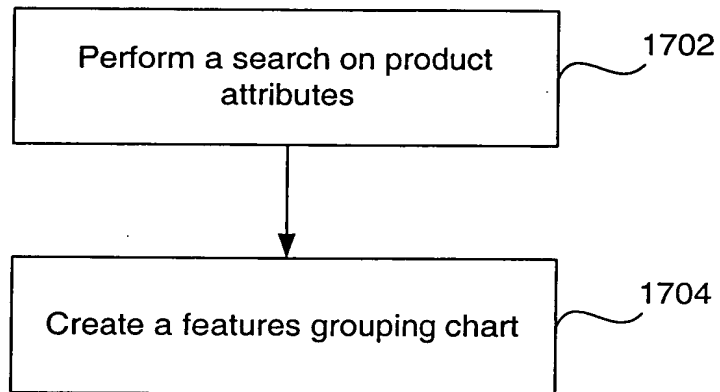
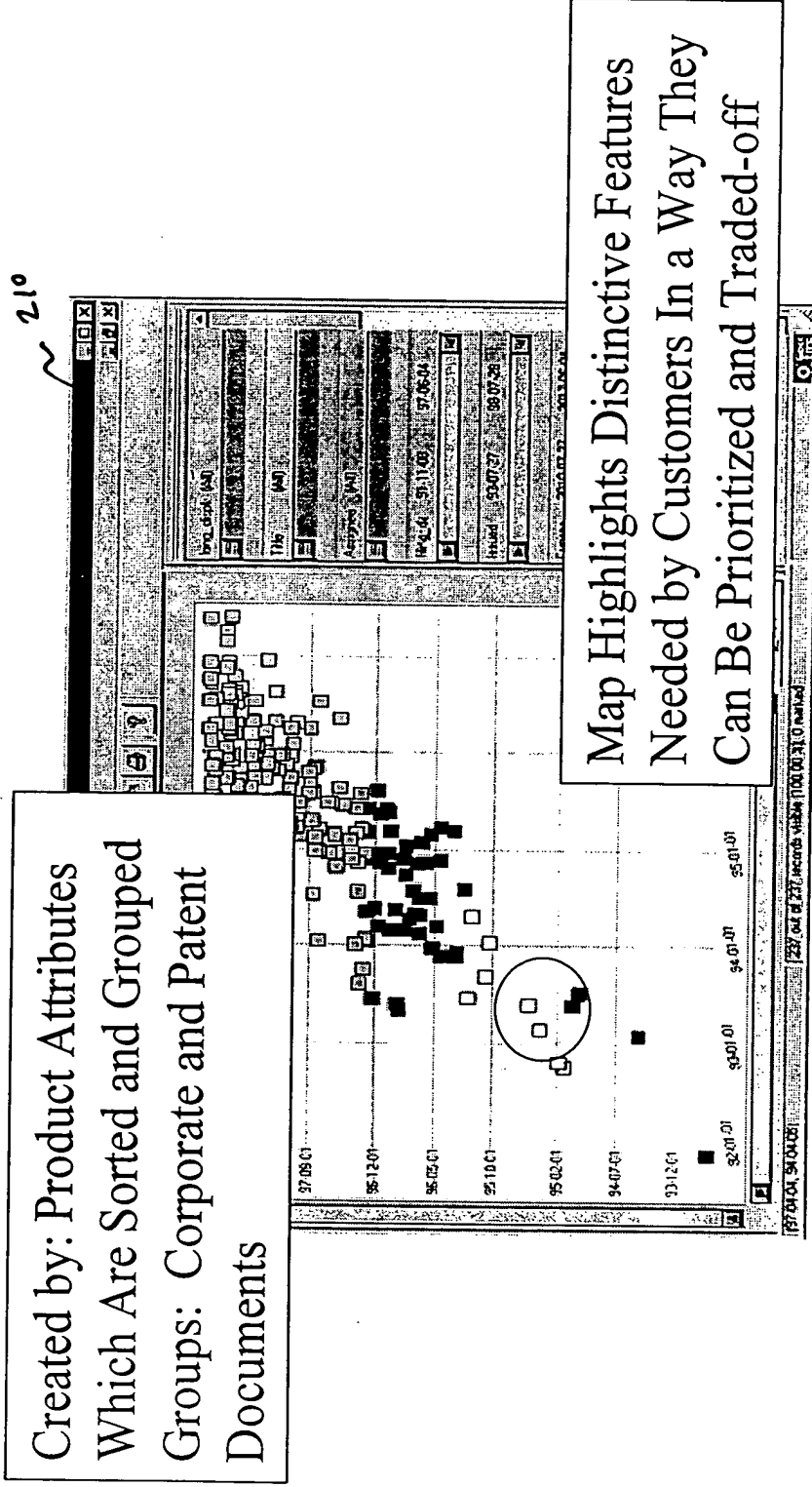


FIG. 17

Tool #23

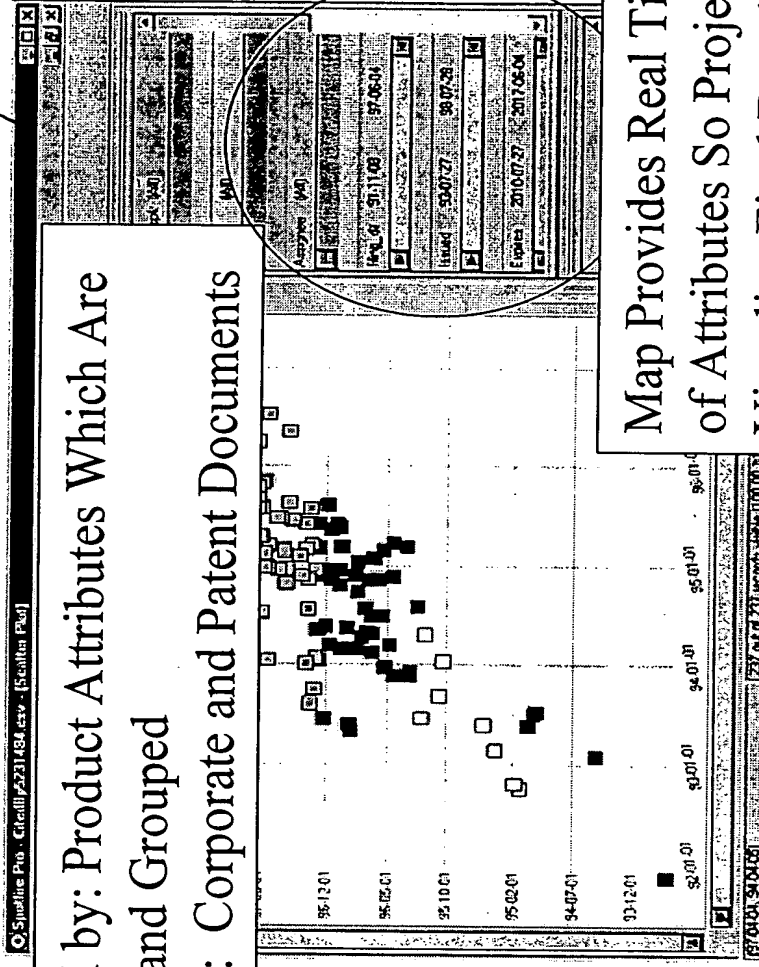
Map of Which Proposed Product Features Are Feasible



Implication: Product Feature Sets Are Found Early in the Project Via Previous Internal and Partner's Research

Tool #34 Map of Achievable Product and Service Features

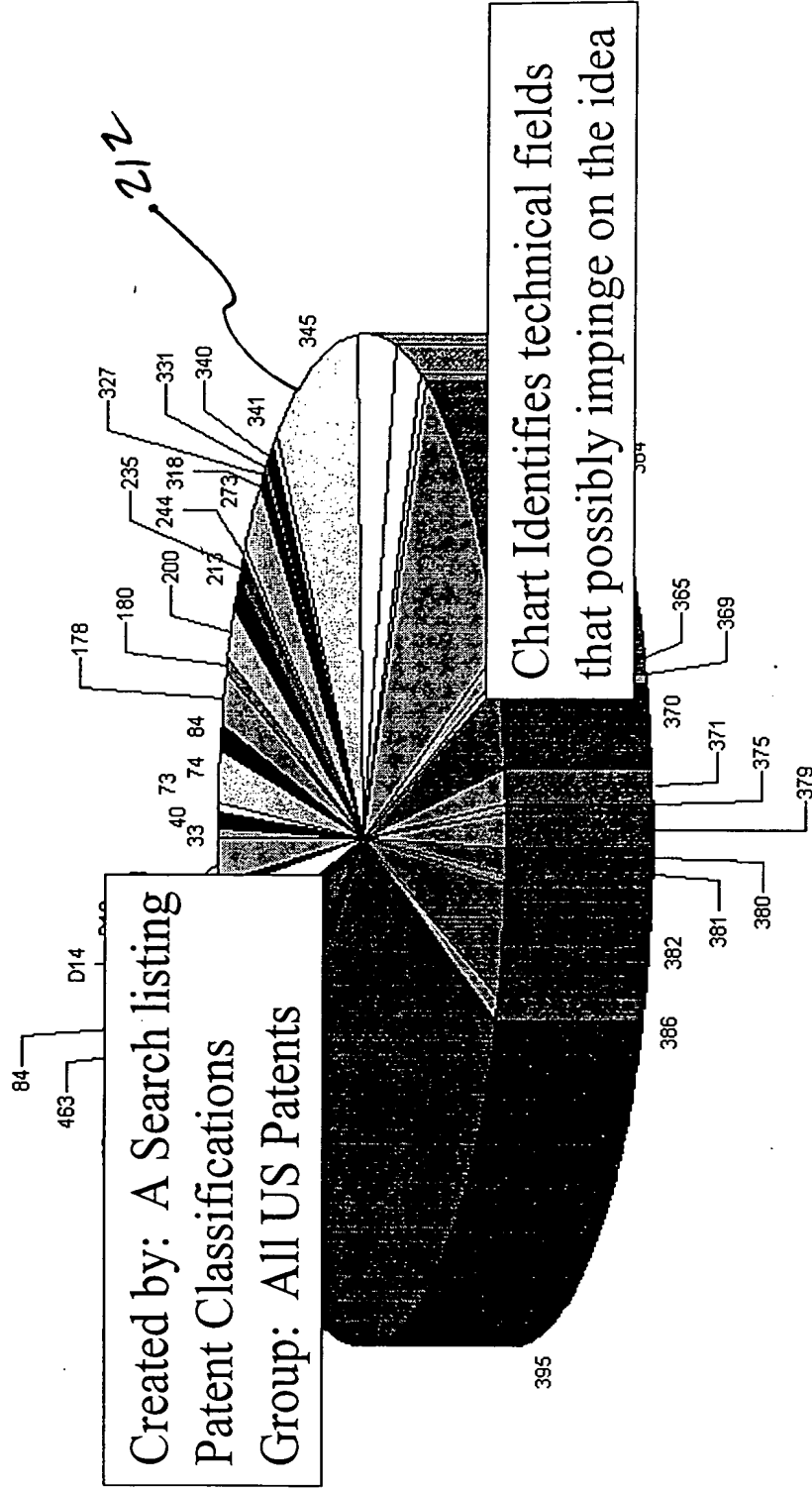
21°



Implication: Product Feature Sets Are Visualized and Presented to Gate Review Team In a Dynamic Form

Tool #4

A Chart of Similar Technologies



2100

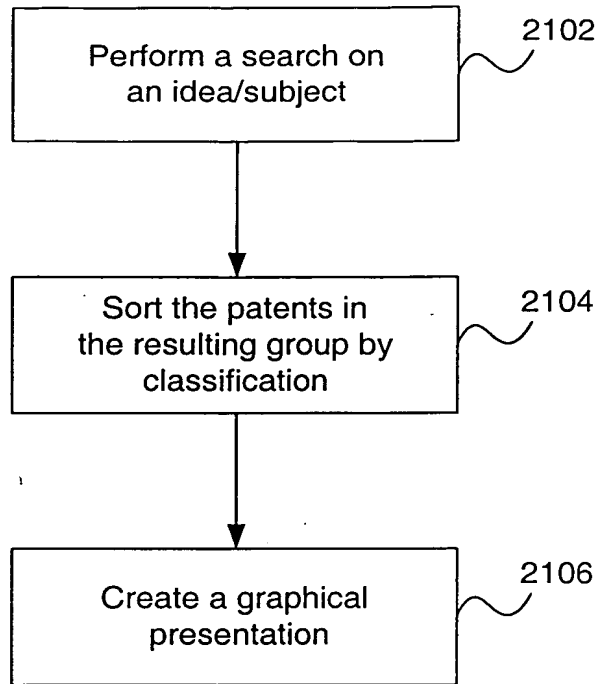
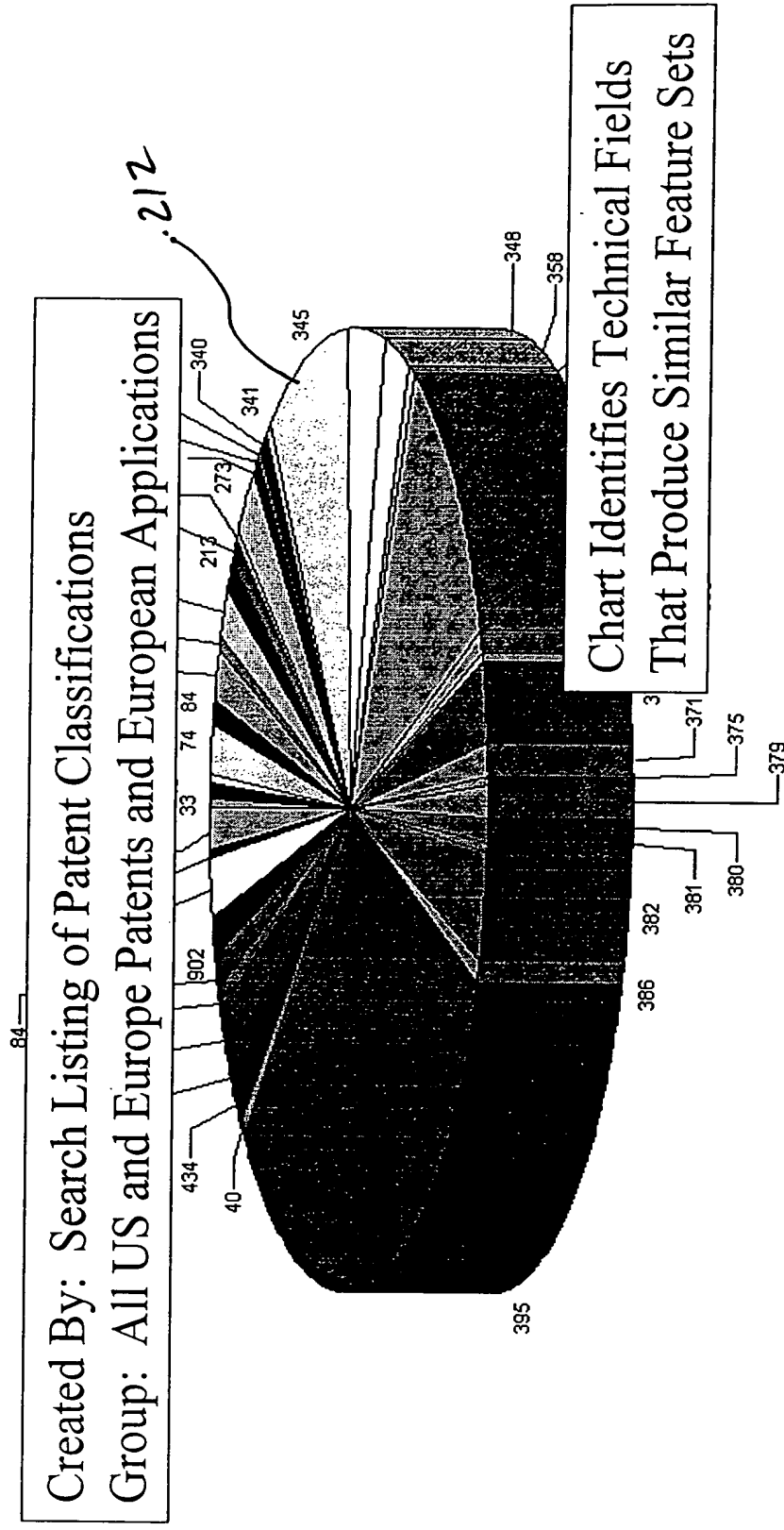


FIG. 21

Tool #13

A Chart of Similar Technologies



Implication: Project Team Finds What Other Technologies Should Be Considered or Which Might Be Used by Competitors

Tool #24

A Chart of Similar Technologies

Created by: A Search
listing Patent
Classifications
Group: All US and
European Patents and
European Applications

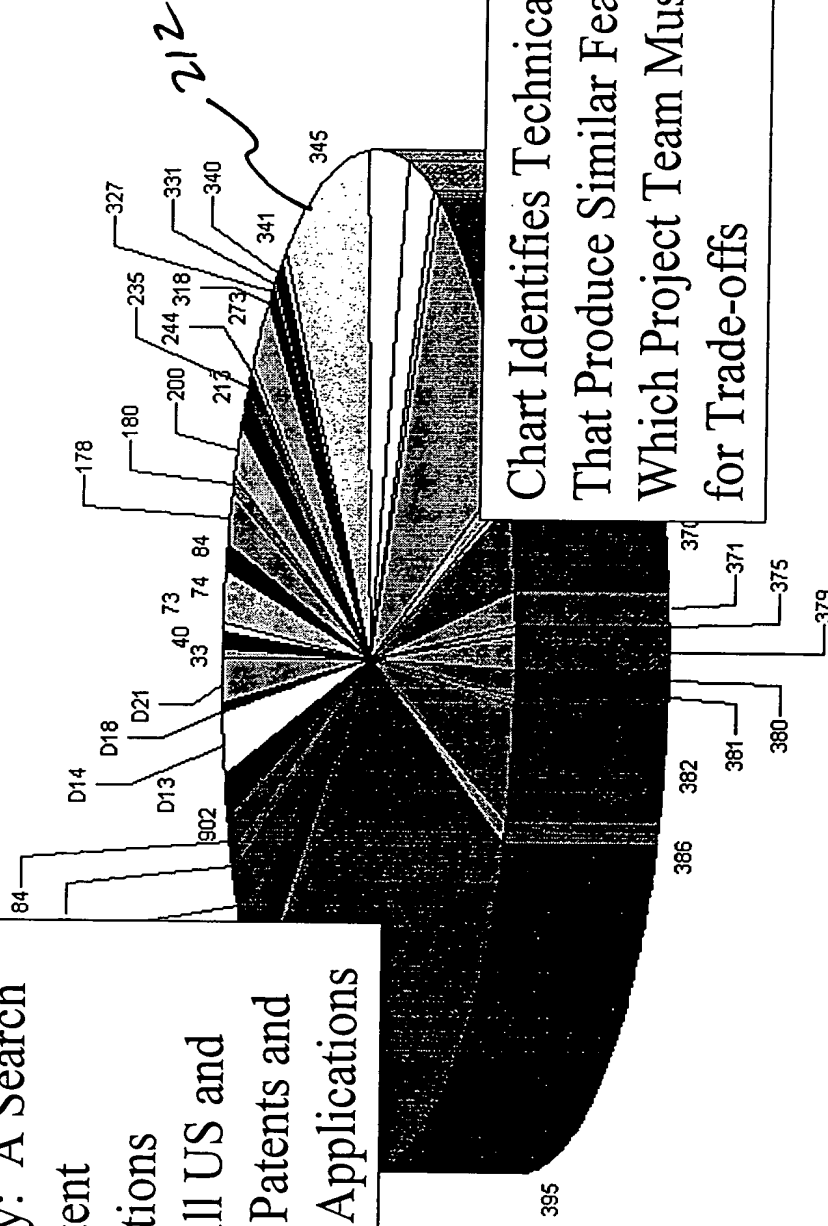


Chart Identifies Technical Fields
That Produce Similar Feature Sets
Which Project Team Must Evaluate
for Trade-offs

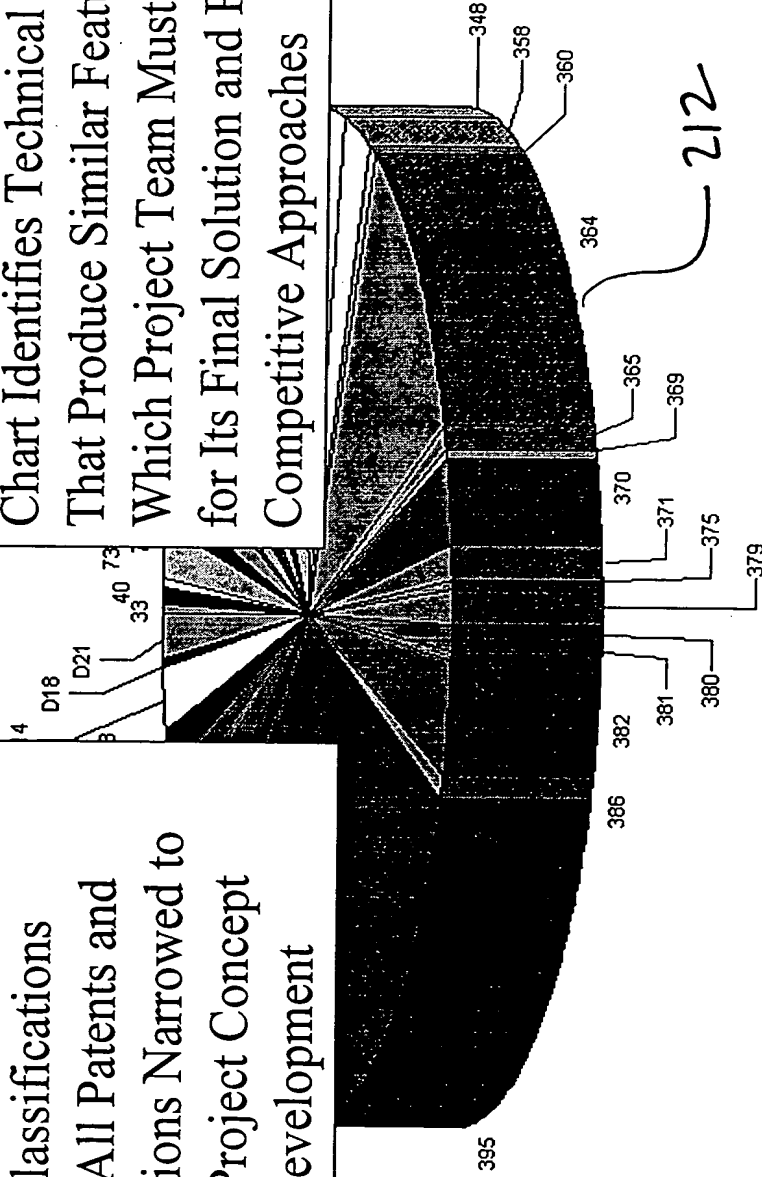
Implication: Defines What Other Technologies Might Be
Feasible and Considered by Technical and Market Teams

Tool #35

Map of similar technologies

Created by: A Search listing
Patent Classifications
Group: All Patents and
Applications Narrowed to
Reflect Project Concept
Under Development

Chart Identifies Technical Fields
That Produce Similar Feature Sets
Which Project Team Must Evaluate
for Its Final Solution and Possible
Competitive Approaches



Implication: Project Team Is Aware of the Strengths and Weaknesses
of Their and Possible Competitive Approaches

Tool #14

A Chart of related markets

Created By: a Search
Listing SIC Codes
Group: All US and
Europe Patents and
European Applications

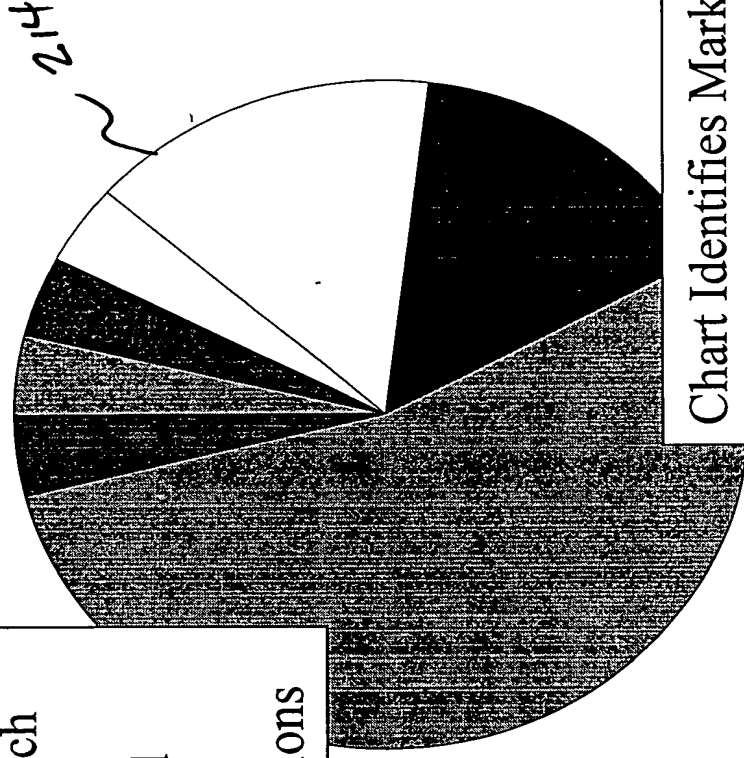


Chart Identifies Market Segments That
Could Possibly Use the Product or Service

Implication: Project Team Finds Other Markets Which Should
Be Assessed by Team Members

002040-135456

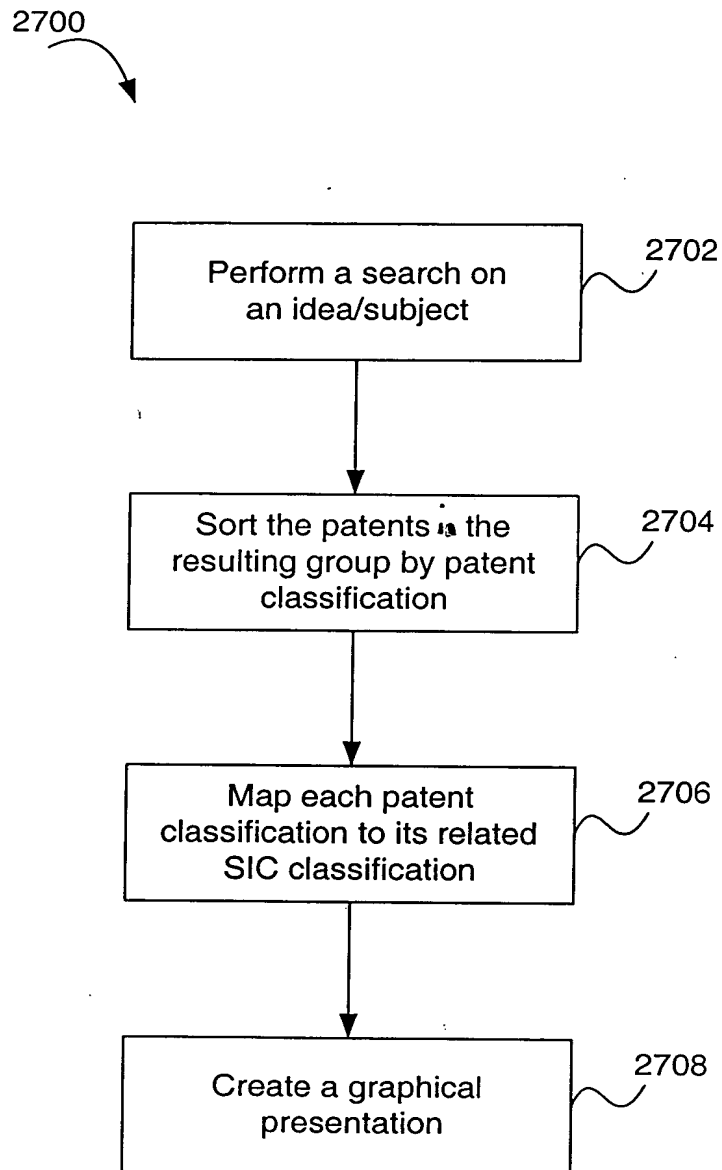


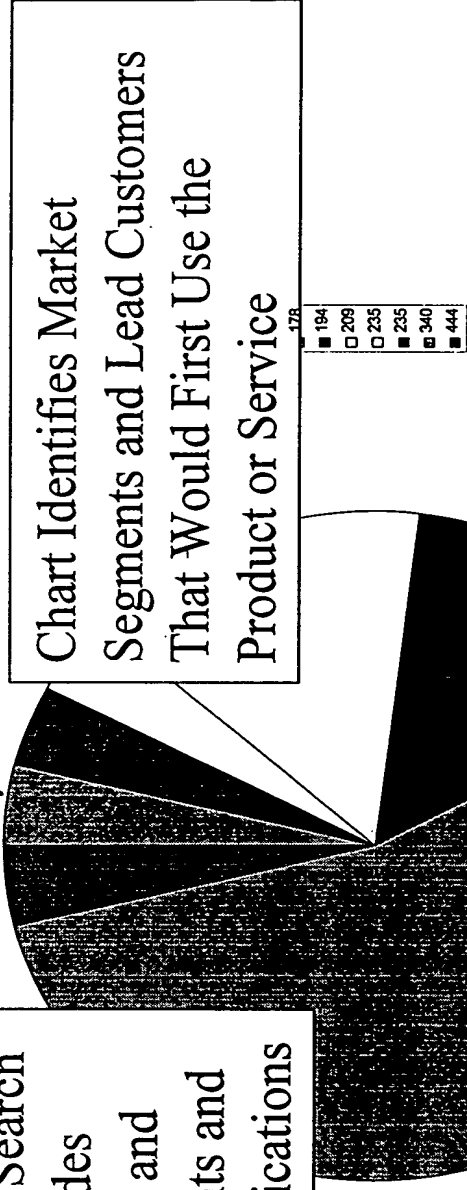
FIG. 27

Tool #25

A Chart of Related Markets

214

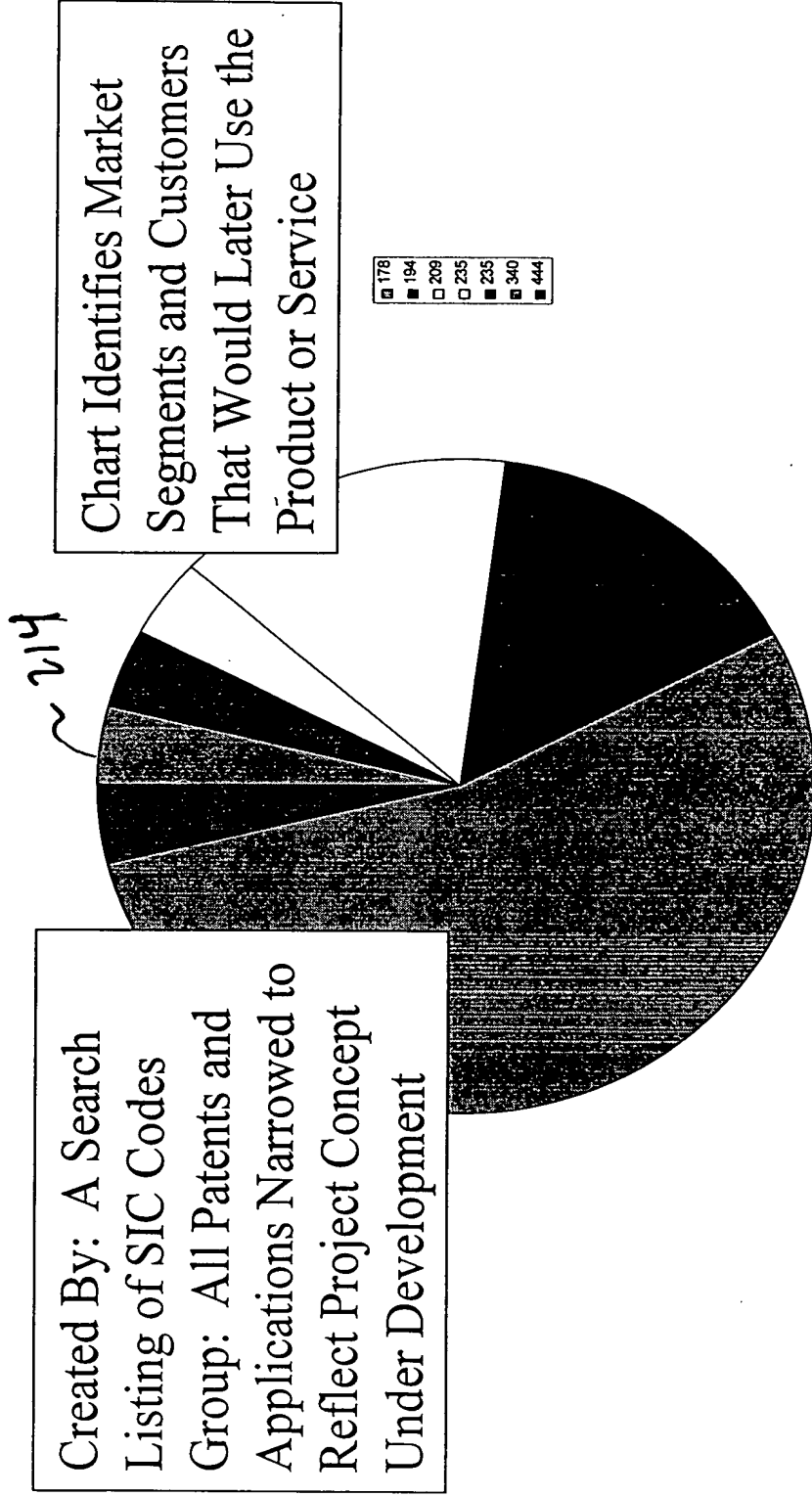
Created By: A Search
Listing SIC Codes
Group: All US and
European Patents and
European Applications



Implication: Project Team Finds What Markets In Which To Check for Lead Customers To Use Product or Service

Tool #36

A Chart of related markets



Implication: Project Team Knows What Markets Are Targets for Sales Growth After Commercialization of Initial Product

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Tool #5

Patent Activity Chart

2/6

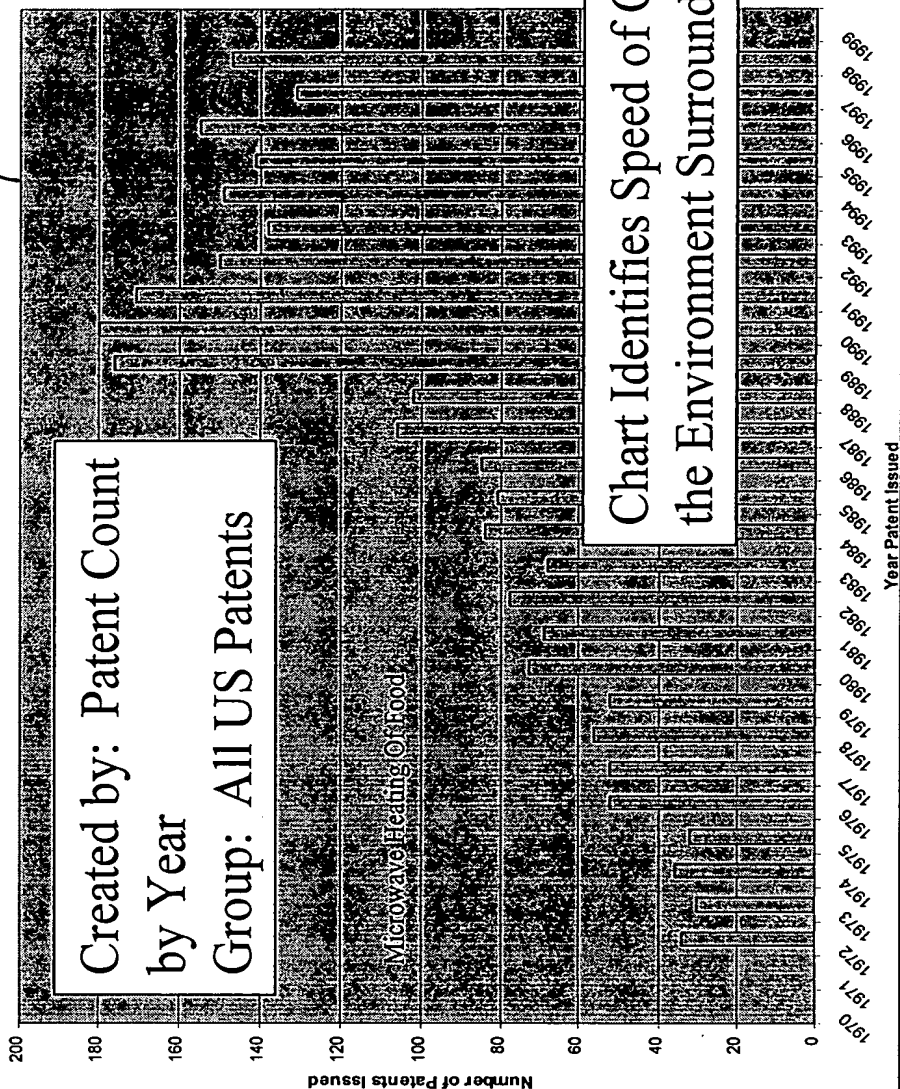


Chart Identifies Speed of Change in the Environment Surrounding the Idea

Implication: Inventor Should Time His/her Efforts To Match the General Activity in the Area of the Idea

FIG. 30

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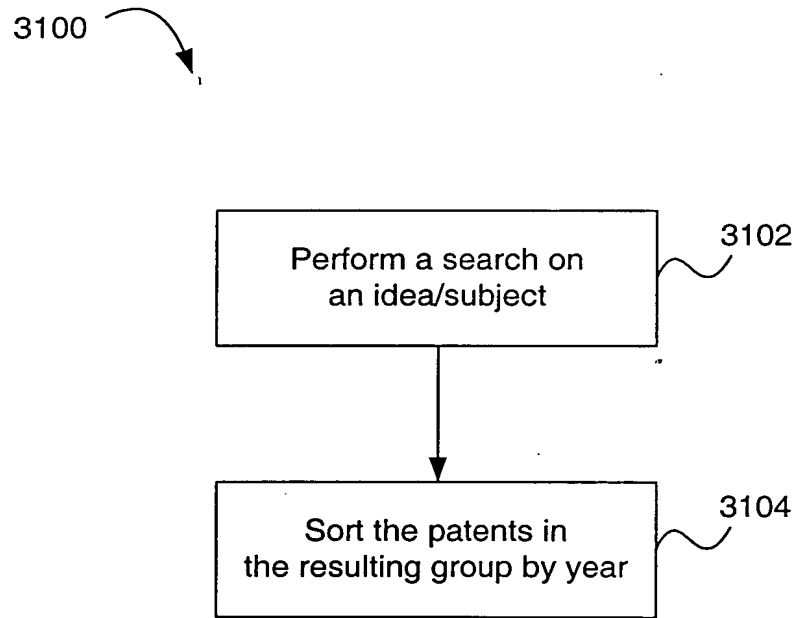


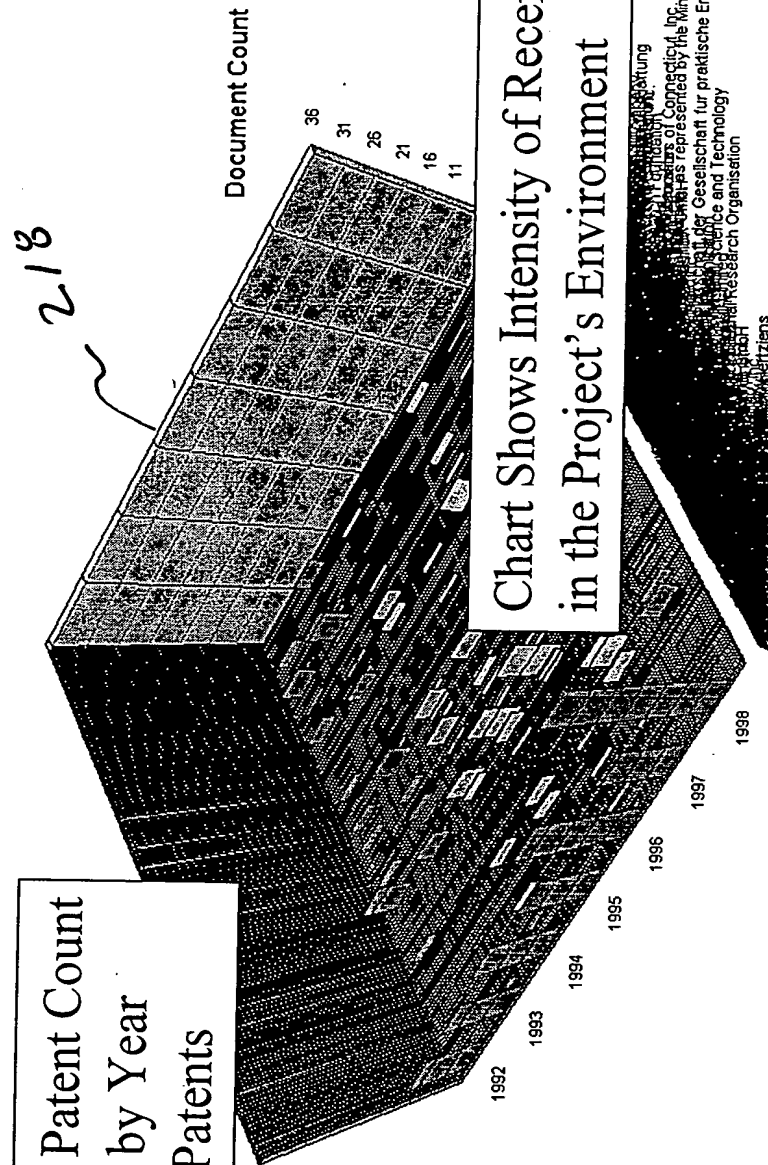
FIG. 31

Tool #15

Recent Patent Activity Chart

Assignee - Patent Count by Year Graph for Microwave Heating of Food After 1992

Created by: Patent Count
by Assignee by Year
Group: All Patents



Implication: If Heavy Activity, the Project Team Should Consider If New Product Is Distinctive Enough to Ensure Commercial Success

FIG. 32

0001-73.vsd/9

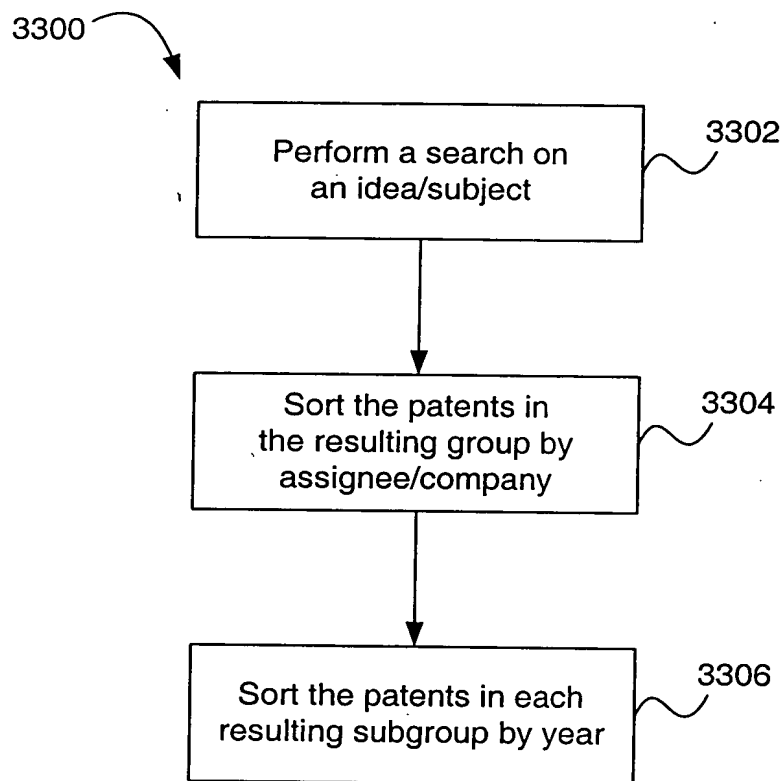


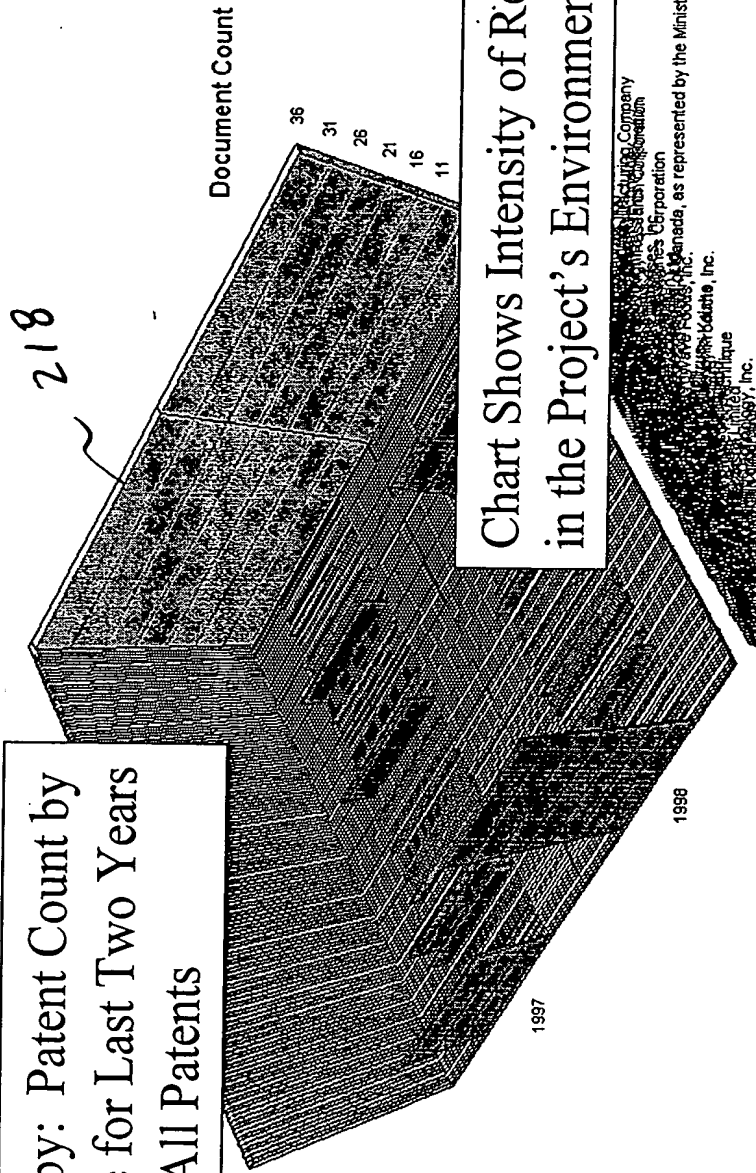
FIG. 33.

002070" h95sh560 Tool #26

Recent Patent Activity Chart

Assignee - Patent Count by Year Graph for After 1997

Created by: Patent Count by
Assignee for Last Two Years
Group: All Patents



Tool #45

Recent Patent Activity Chart

Assignee - Patent Count by Year Graph for AFTER 1998

Created by: Patent Count
by Assignee by Year
Group: All Patents

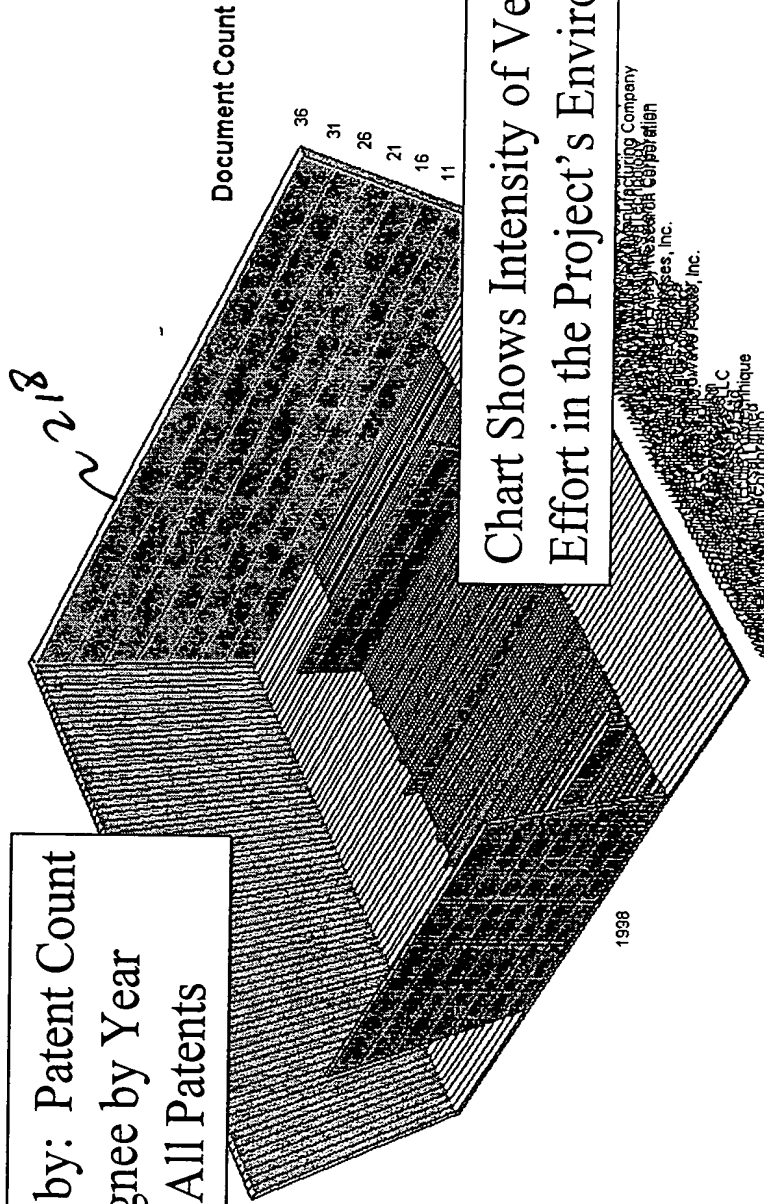
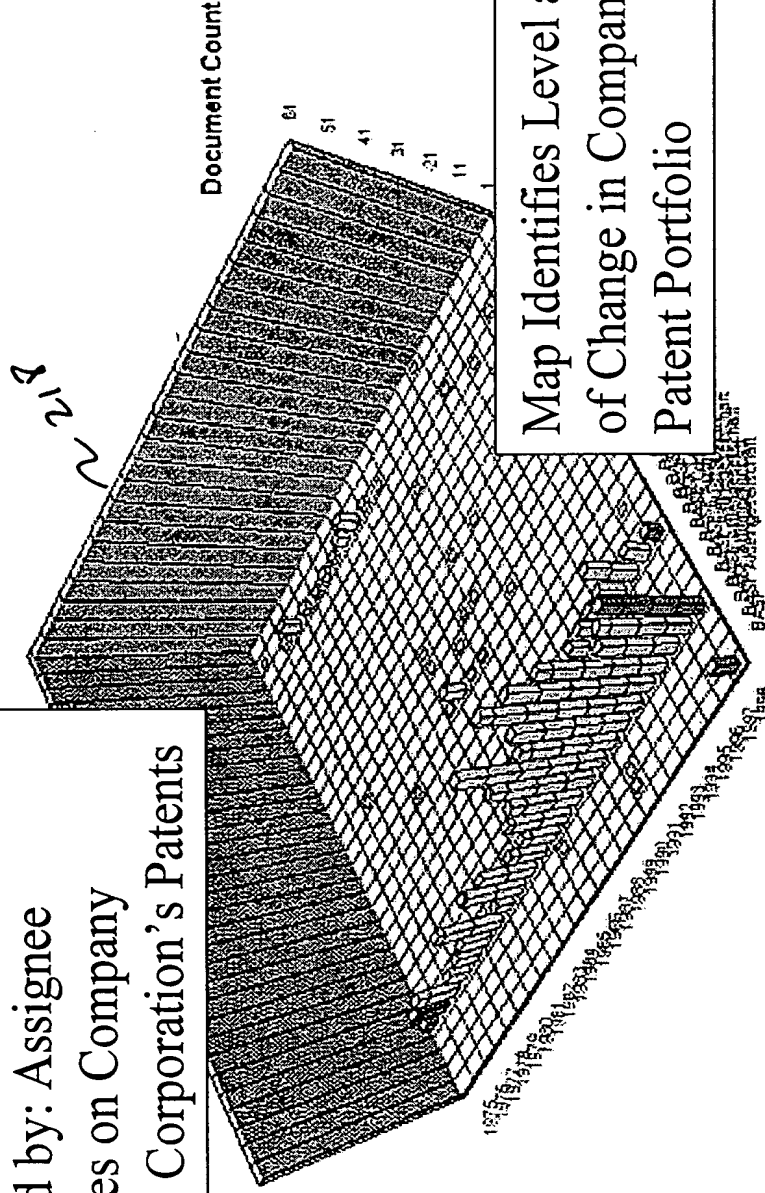


Chart Shows Intensity of Very Recent Effort in the Project's Environment

Implication: Project Team Knows Competitors to Watch Closely

Tool #53 Map of Company Patent Activity

Created by: Assignee
Searches on Company
Group: Corporation's Patents



Recent Patent Application Chart

Assignee - Patent Application Count by Year Graph for Microwave Heating of Food Applications after 1995

Created by: Application Count
by Assignee For Last Four Years
Group: All European Applications

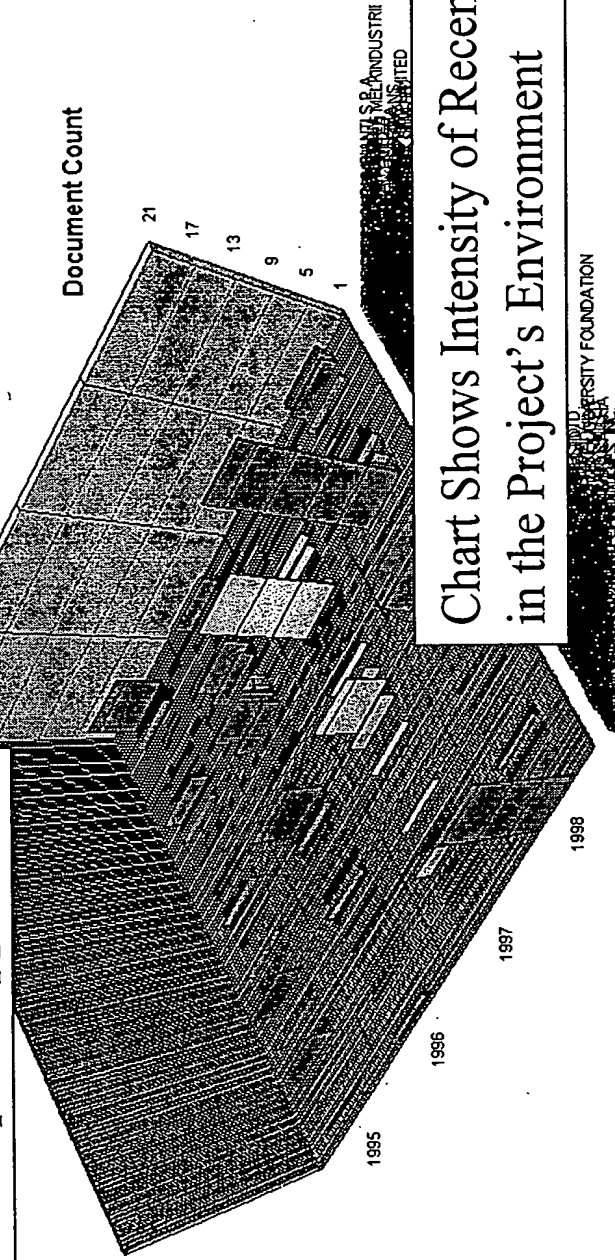


Chart Shows Intensity of Recent Effort
in the Project's Environment

Implication: Project Team Knows Potential Partners and
Competitors to Preliminarily Assess

```
graph TD; 3900((3900)) --> 3902[3902 Perform a search on an idea/subject]; 3902 --> 3904[3904 Sort the applications in the resulting group by assignee/company]; 3904 --> 3906[3906 Sort the applications in each resulting subgroup by year];
```

3900

3902 Perform a search on an idea/subject

3904 Sort the applications in the resulting group by assignee/company

3906 Sort the applications in each resulting subgroup by year

0001-73.vsd/10

Recent Patent Application Chart

Assignee - Patent Application Count by Year Graph for 1997

Created by: Application Count
by Assignee For Last Two Years
Group: All European Applications

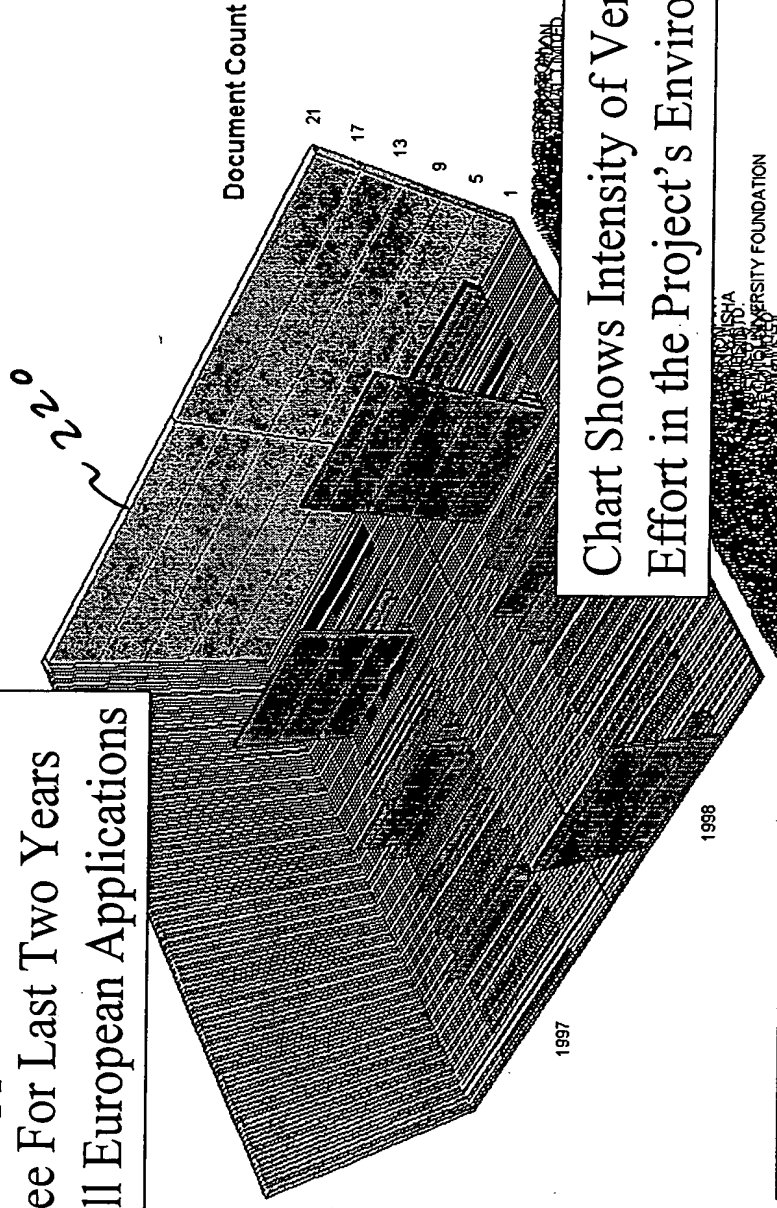


Chart Shows Intensity of Very Recent
Effort in the Project's Environment

Implication: Project Team Knows Potential Partners To
Approach and Competitors to Watch

Recent Patent Application Chart

Assignee - Patent Application Count by Year Graph for 1998

Created by: Application Count
by Assignee For Last Year
Group: All European Applications

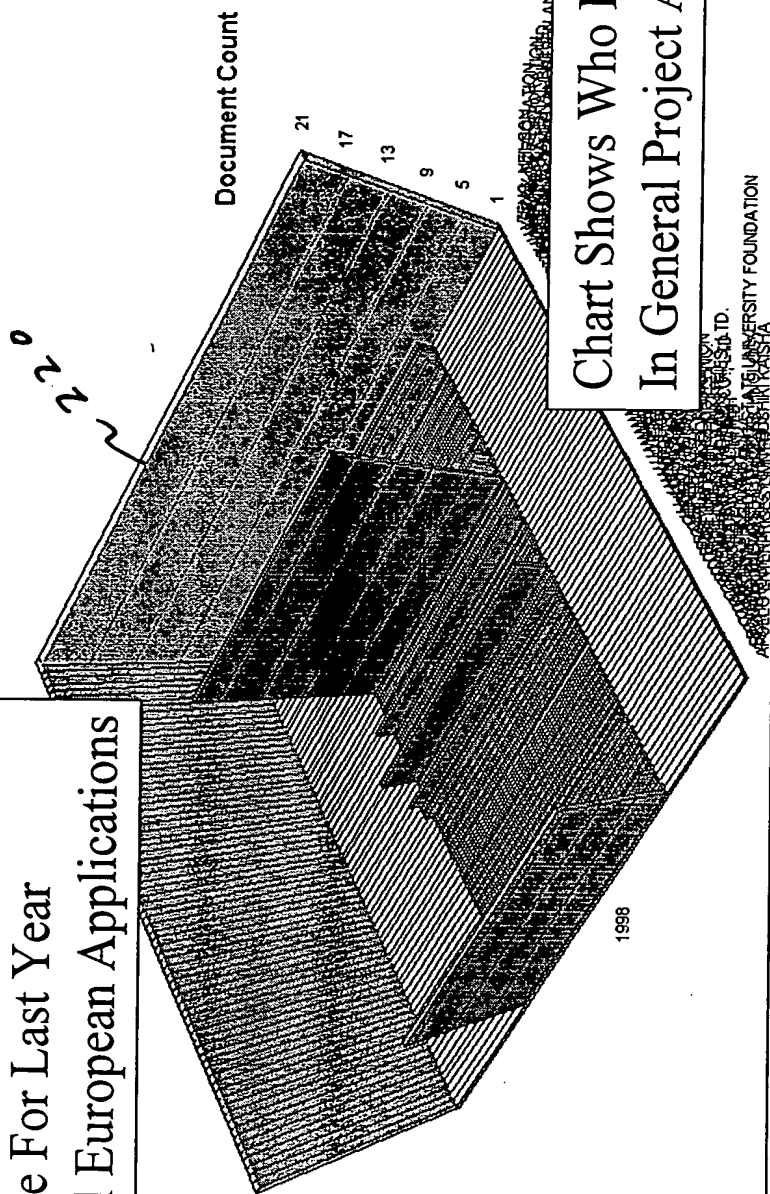


Chart Shows Who Is Active
In General Project Area

Implication: Project Team and Competitive Intelligence
Knows Which Competitors to Watch

Recent Patent Application Chart

Assignee - Patent Application Count by Year Graph for 1998

Created by: Application Count
by Assignee For Last Year
Group: All European Applications

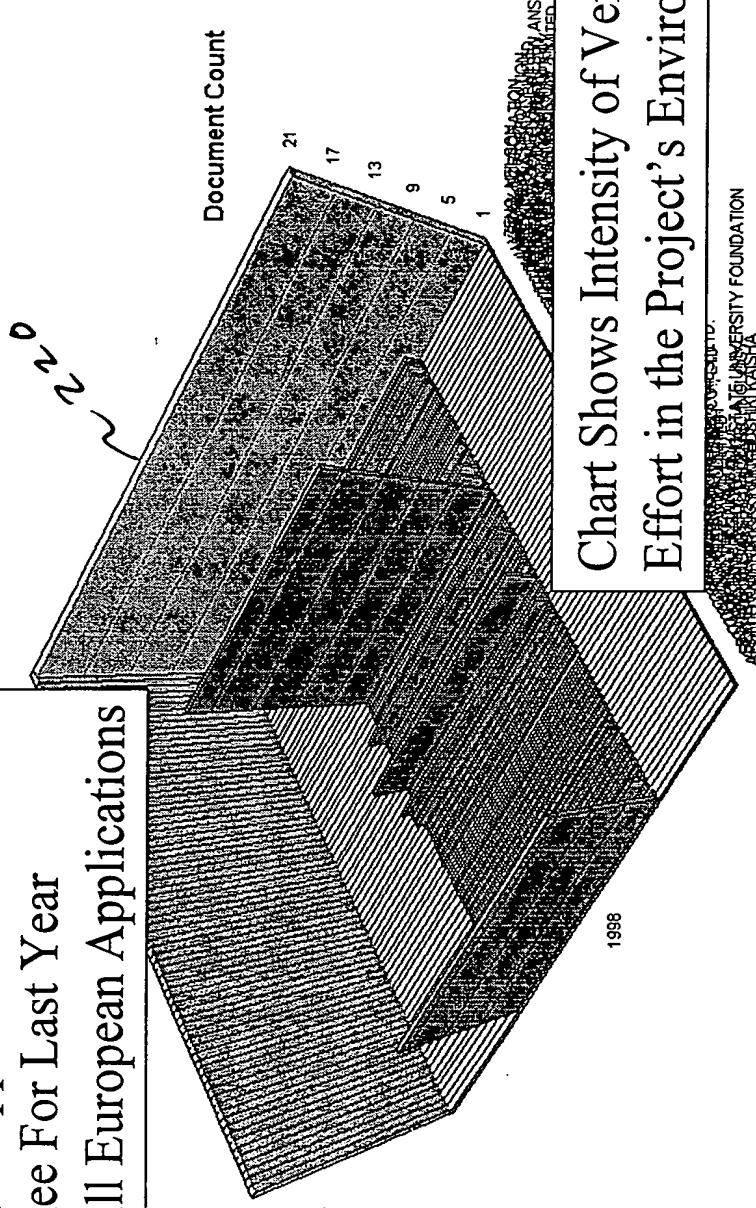


Chart Shows Intensity of Very Recent
Effort in the Project's Environment

Implication: Project Team Knows Potential Partners and
Competitors to Watch

FIG. 42

[illegible]

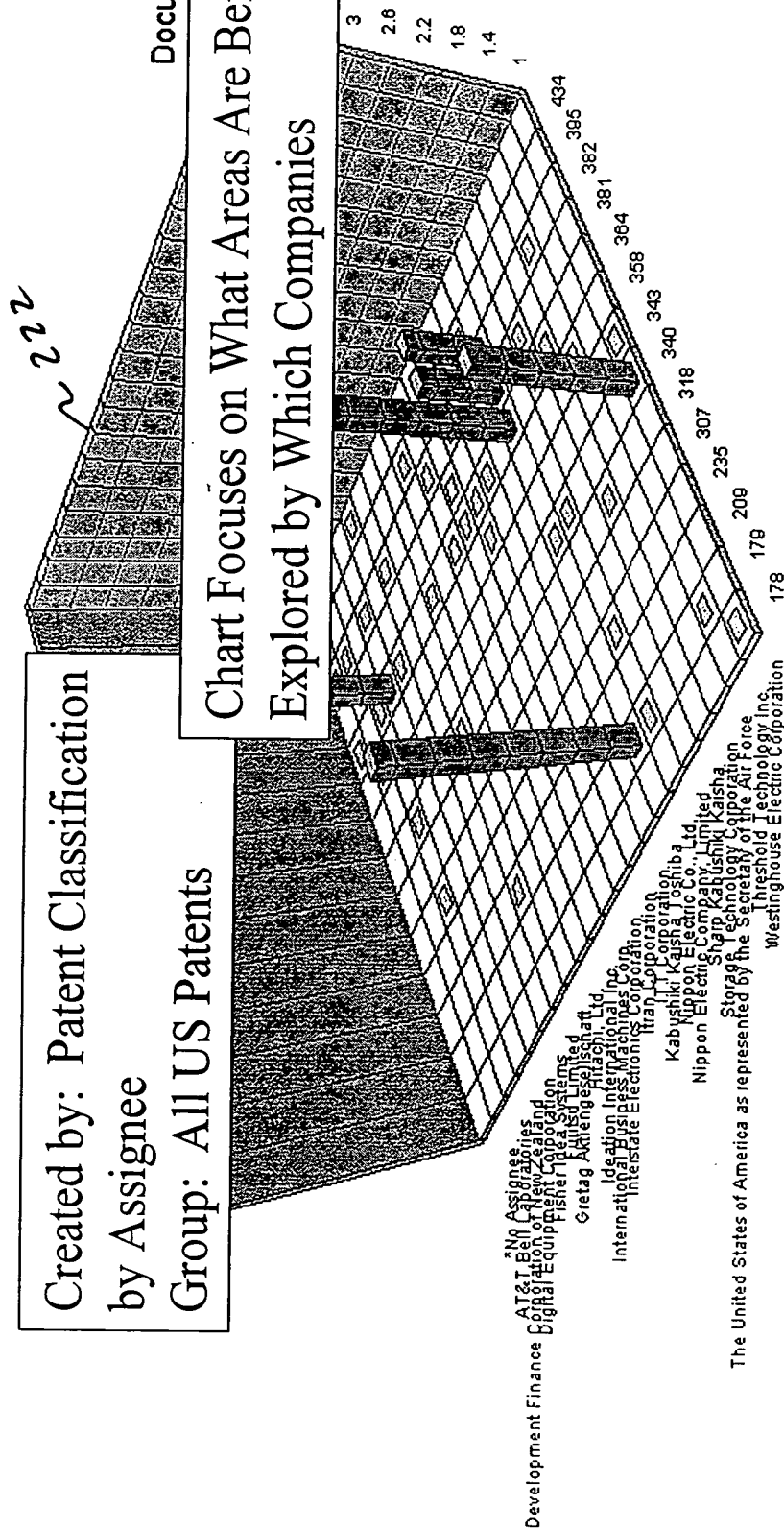
Tool #6

Chart Narrowing Areas to Explore

Created by: Patent Classification
by Assignee
Group: All US Patents

Document

Chart Focuses on What Areas Are Being Explored by Which Companies



Implication: Inventor Knows in Which Competitors Major Efforts Exist. Possible Partners Are Likewise Identified

CH 643

THE UNIVERSITY OF CHICAGO

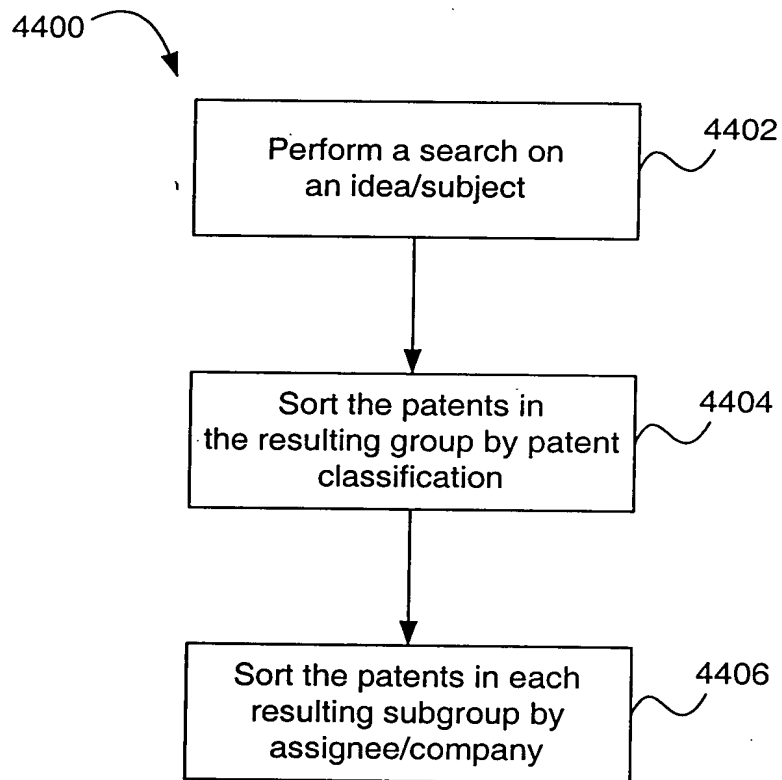


FIG. 44

Tool #28

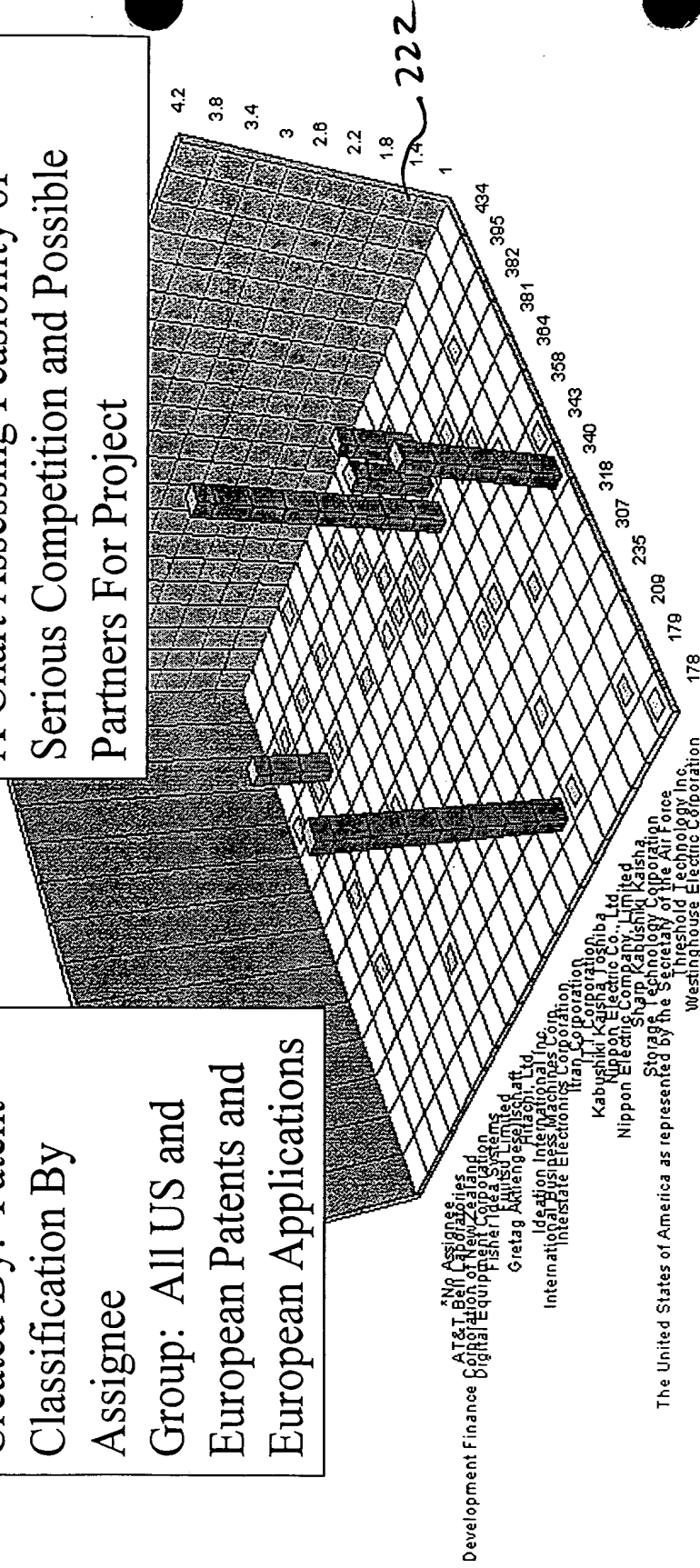
A Chart Narrowing Areas to Explore

Created By: Patent
Classification By

Assignee

Group: All US and
European Patents and
European Applications

A Chart Assessing Feasibility of
Serious Competition and Possible
Partners For Project



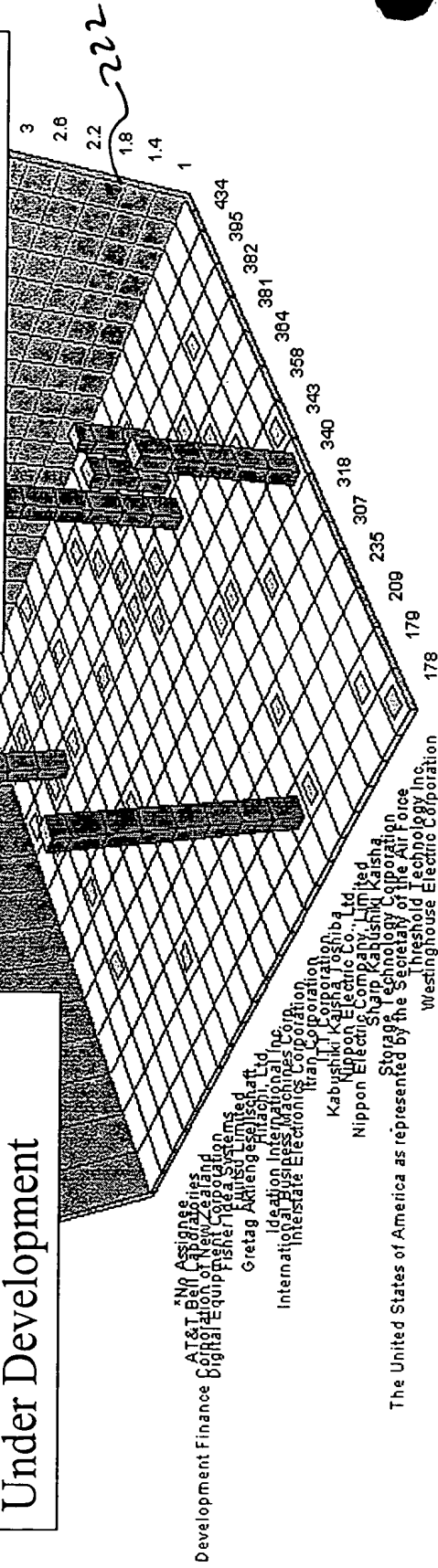
Implications: The Project Team Knows Which Companies
to Approach and Avoid For Each Technical Area

Tool #39

A Chart Showing Areas to Lock-Up or Lock-Out

Created By: Patent
Classification by Assignee
Group: All Patents and
Applications Narrowed to
Reflect Project Concept
Under Development

Chart Helps Project Team Steer
Development Clear of Serious
Competition and Complete
Research Needed for Blocking
Applications and Publications



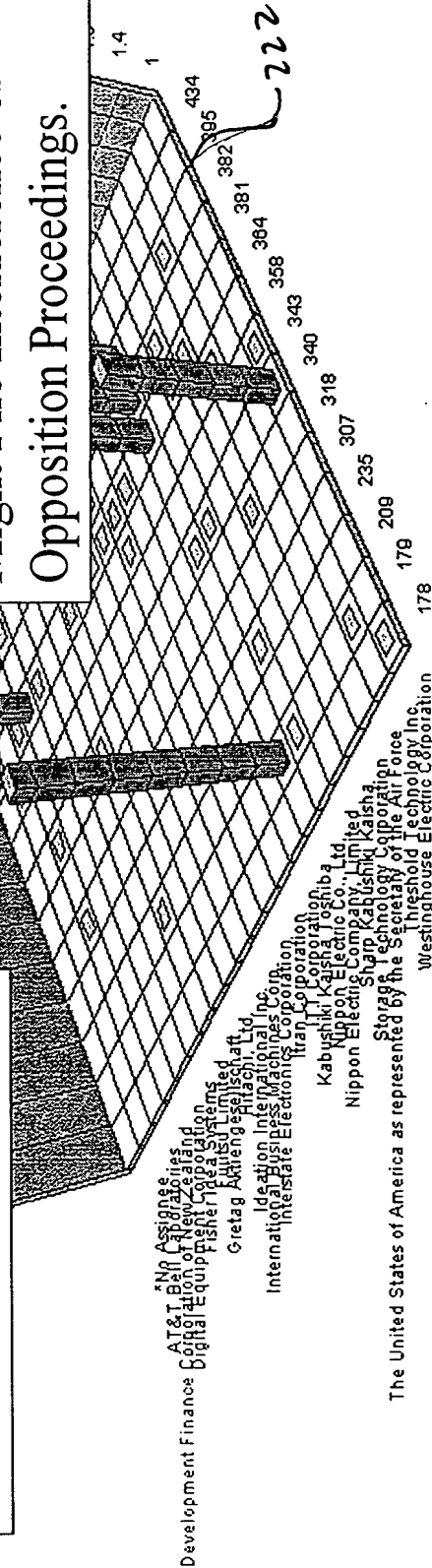
Implication: Project Has Appropriate Intellectual Property to
Protect Sales Margin

Tool #47

A Chart Narrowing Areas to Explore

Created by: Patent Classification by Assignee
Group: Patents and Applications Narrowed to Reflect Developing Product

Chart Shows How to Steer Patent Prosecution Around Serious Competition and File Blocking Applications. It Can Also Be Used to Highlight Who Might File Interference or Opposition Proceedings.



Implication: Shows Patent Attorney, Inventors, and Patent Committee Which Areas and What Companies to Watch.

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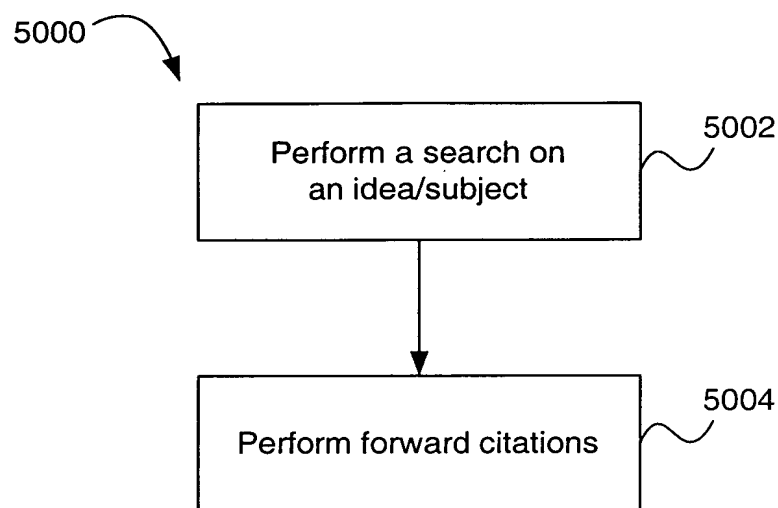
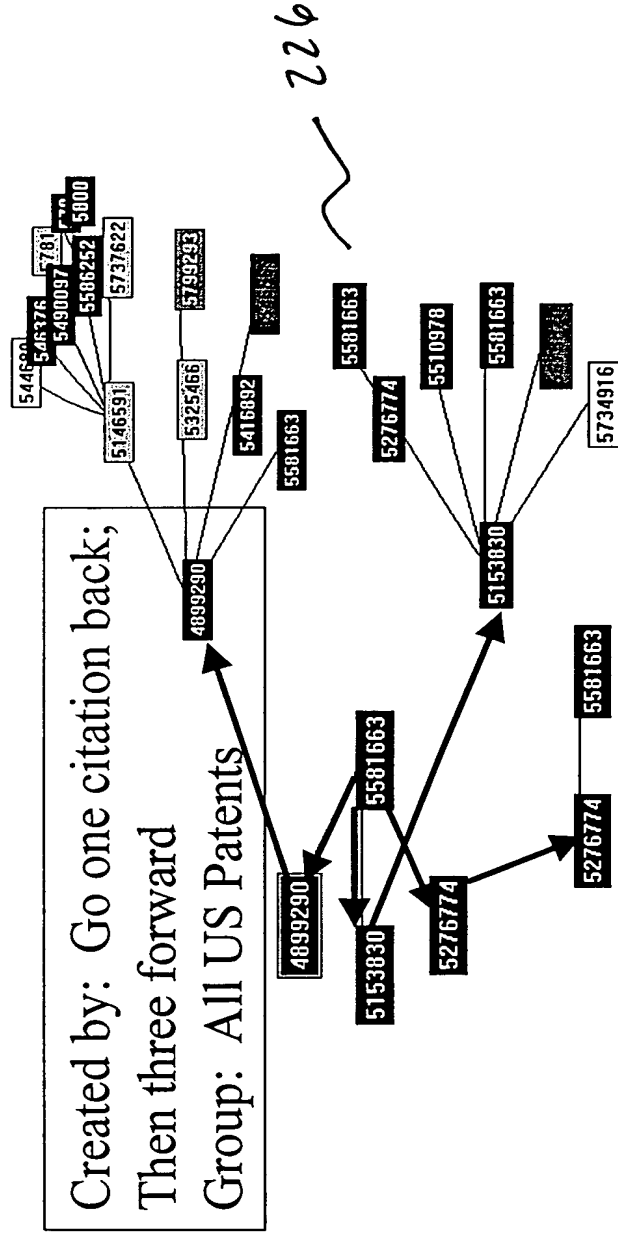


FIG. 50

Tool #8

A Citation Root-tree Showing Idea's Environment



The Citation Root-tree Predicts Related Areas That Are Possibly Under Exploration by Other Companies

Implication: The Inventor Can Promote His Idea As Distinct From Other On-going Work

1. 1
 2. 1
 3. 1
 4. 1
 5. 1
 6. 1
 7. 1
 8. 1
 9. 1
 10. 1
 11. 1
 12. 1
 13. 1
 14. 1
 15. 1
 16. 1
 17. 1
 18. 1
 19. 1
 20. 1
 21. 1
 22. 1
 23. 1
 24. 1
 25. 1
 26. 1
 27. 1
 28. 1
 29. 1
 30. 1

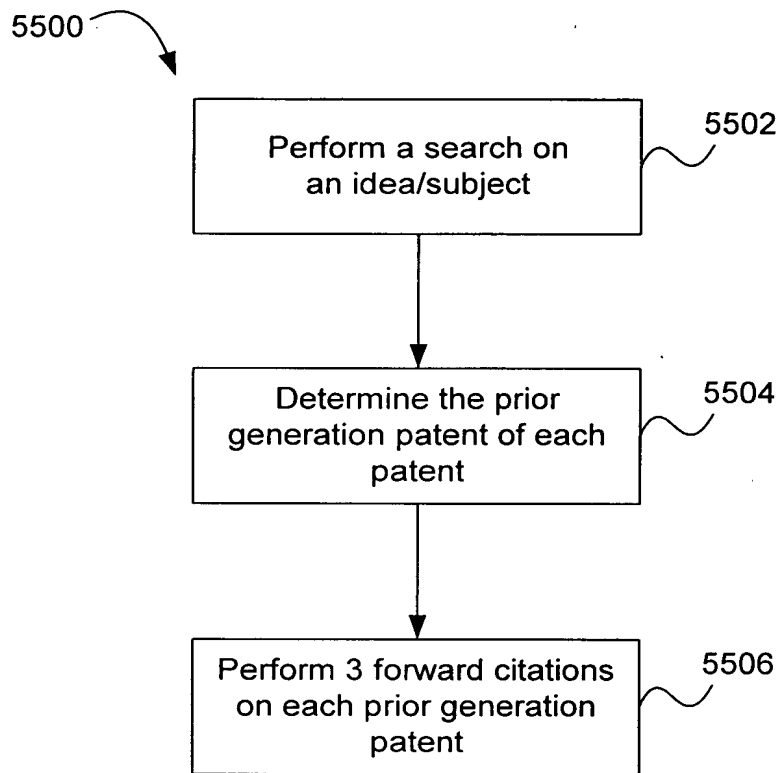


FIG. 55

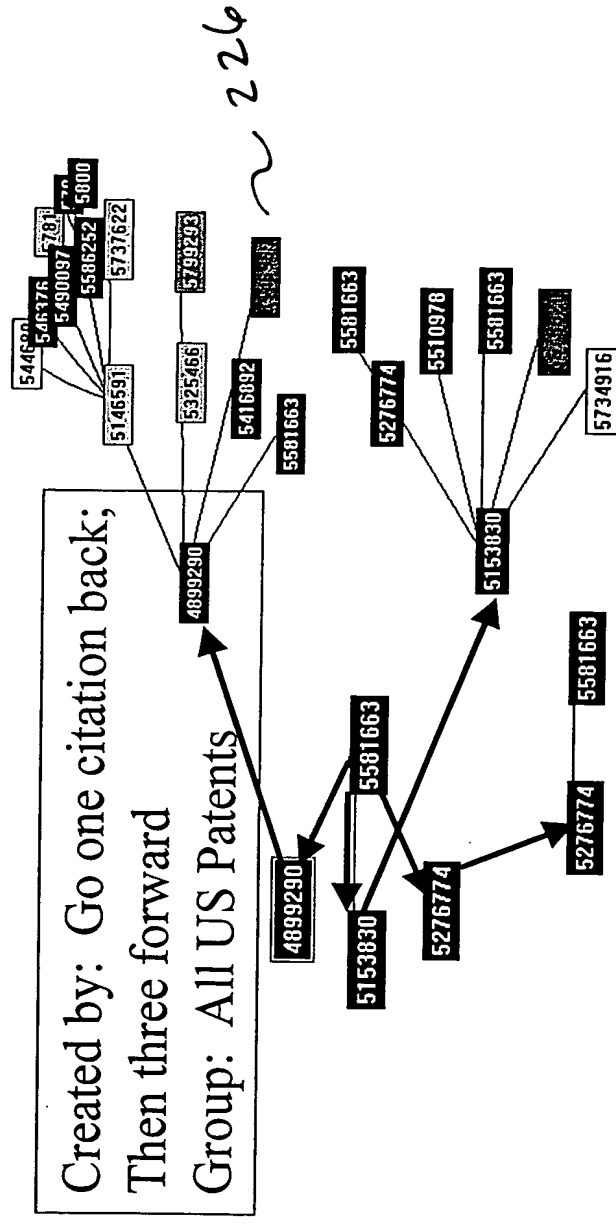
A Citation Root-tree Showing Concept's Environment



Implication: The Project Team Can Predict If There Are Possibly Other Competing Technology and Markets Under Development.

Tool #41

A Citation Root-tree Showing Project's IP Position

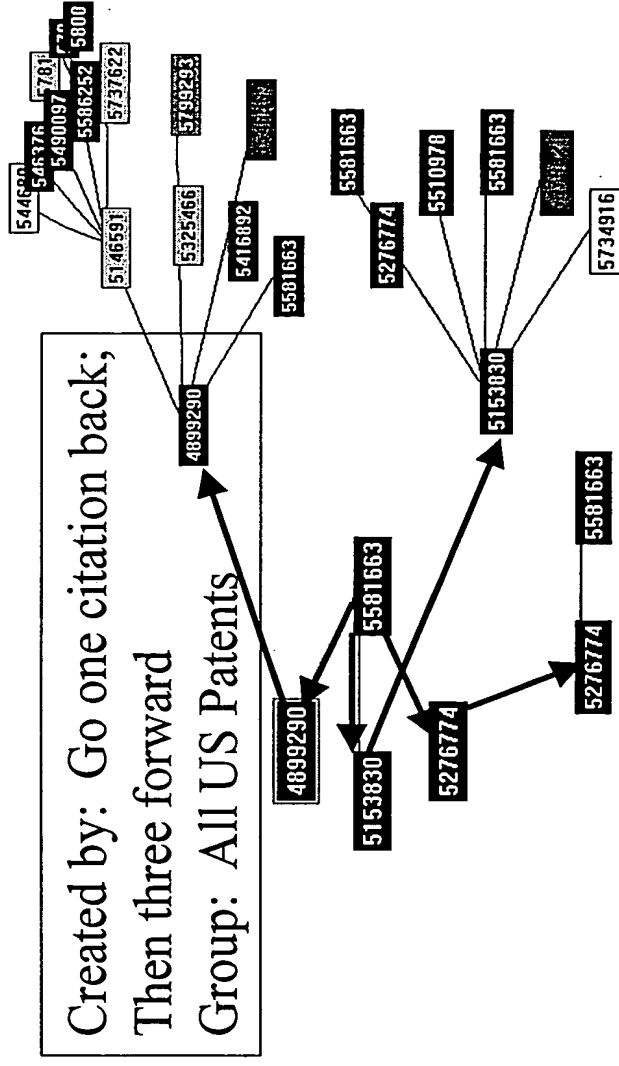


Continuous Updating of The Citation Root-tree Shows Which Companies Competitive Intelligence Must Follow in Detail

Implication: The Project Team Knows If Its Development Activities and Project Timing Are Likely to Yield a Commercial Competitive Success

Tool #48

A Citation Root-tree To Time Project's IP Filings



Continuous Updating The Citation Root-tree Shows New Work Competitive Intelligence Must Immediately Check Out to Protect Scale-up Activities

Implication: The Project Team Can Time Scale-up Activities and Filing of Patents to Ward Off Competition

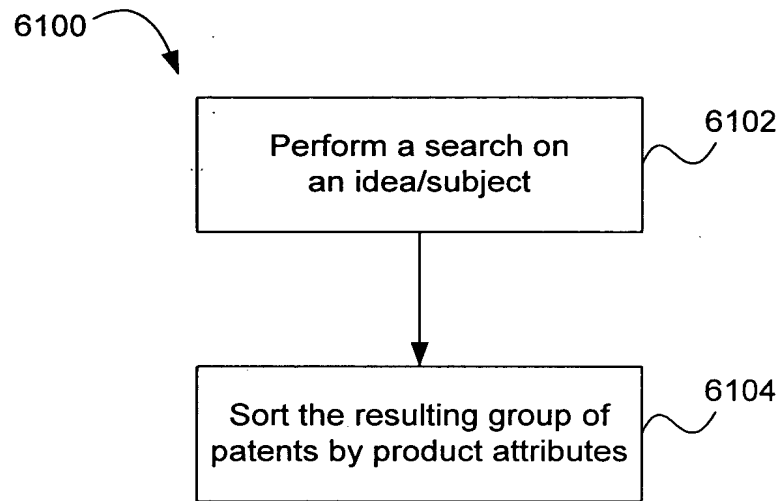


FIG. 61

Tool #31

Cycle Time for Patent Prosecution

130

Created by: ²⁵Searching US
Patents Related to Project
Group: All US Patents

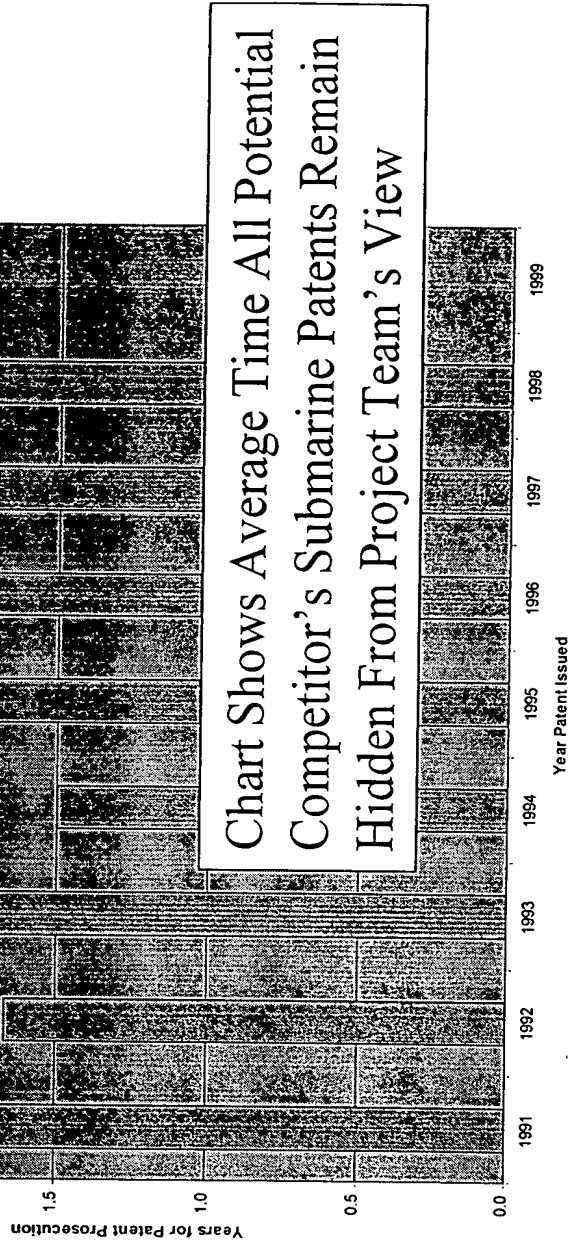


Chart Shows Average Time All Potential
Competitor's Submarine Patents Remain
Hidden From Project Team's View

Implication: Project Team Knows Timing Risk From US Patent
Databases

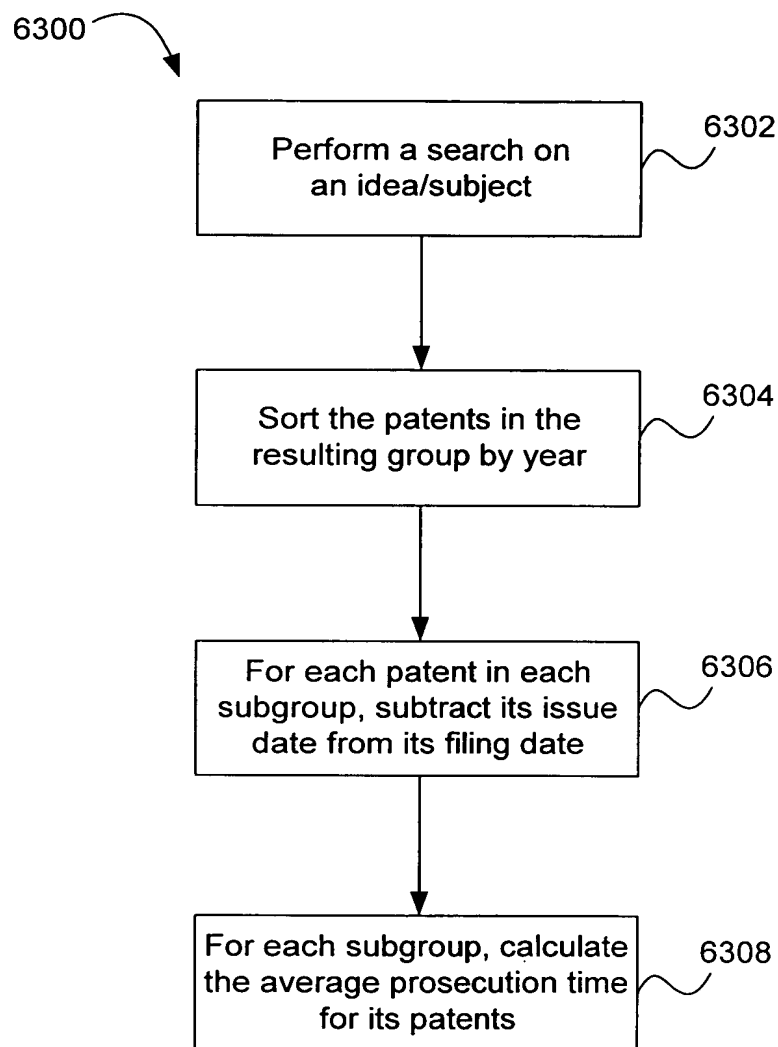
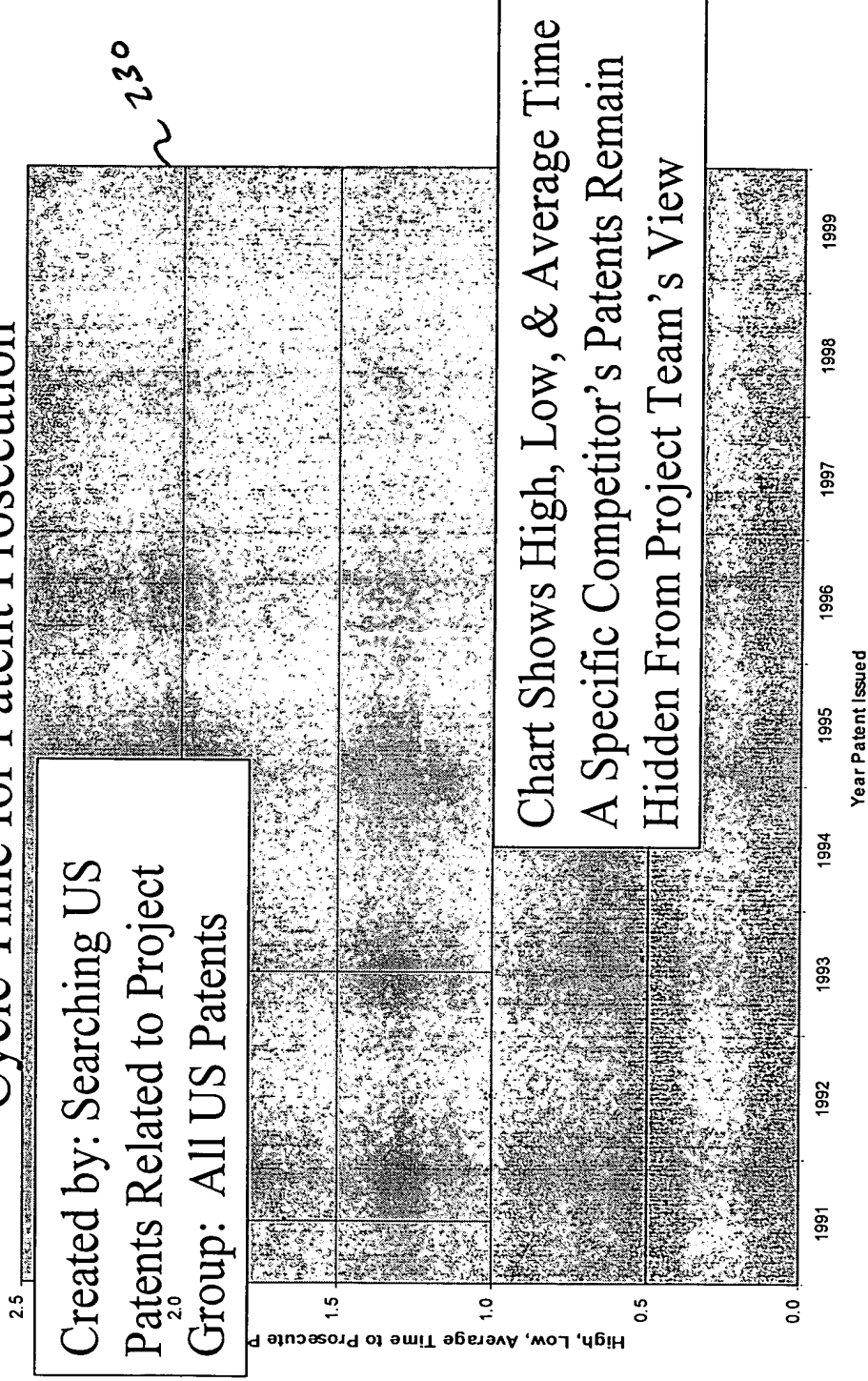
[illegible]

FIG. 63

Tool #42

Cycle Time for Patent Prosecution

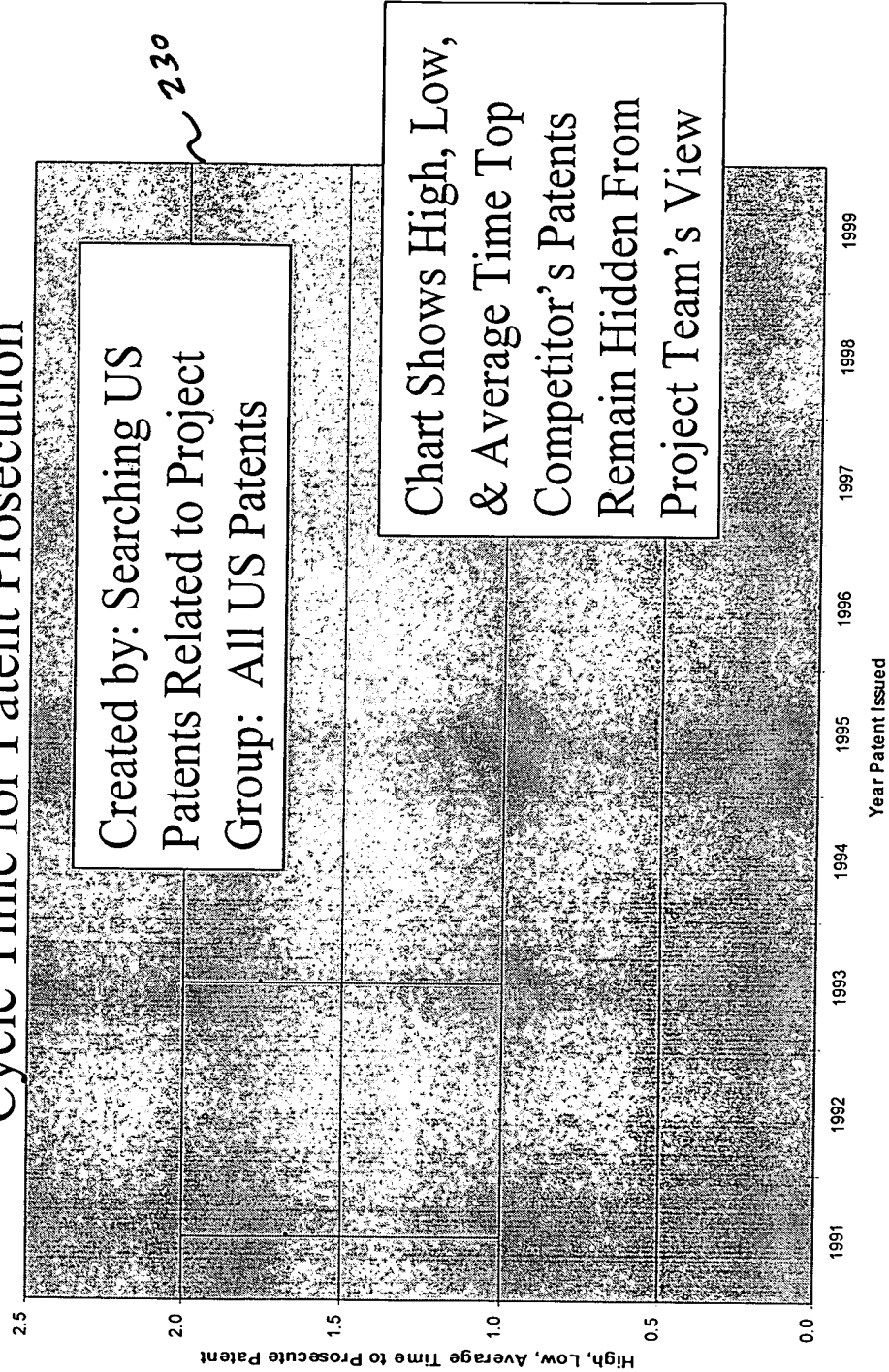


Implication: Project Team Knows Timing Risk From Specific
Competitor's Upcoming Patents

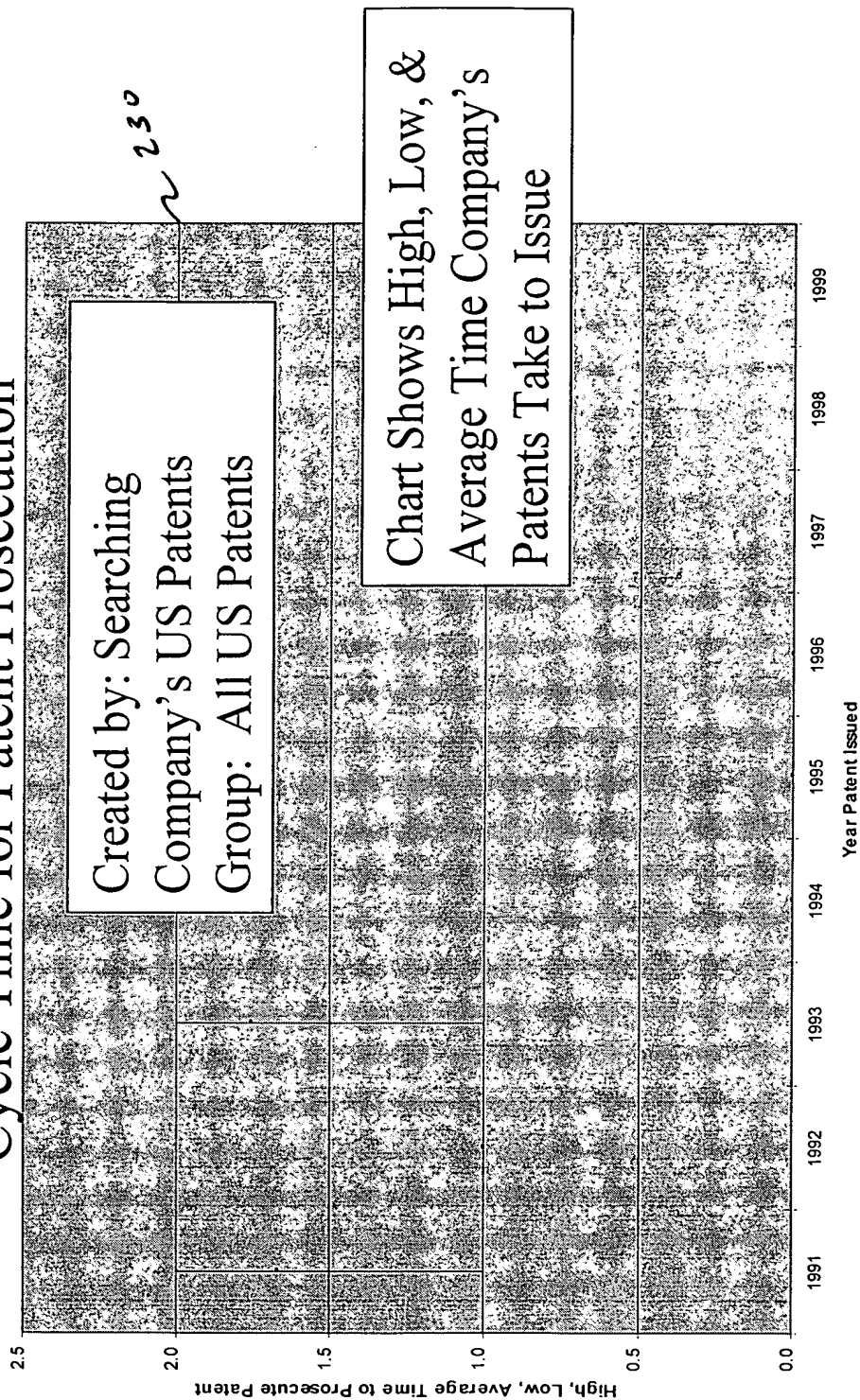
FIG. 64

Tool #49

Cycle Time for Patent Prosecution



Tool #54 Cycle Time for Patent Prosecution



Implication: R&D Management Can Take Steps to Bring This Timing Into Sync With European Applications

Notes to Document Thoughts and Analysis

Created by: Annotating
Patents & Corporate
Documents
Group: All Patents and
Documents Studied

Notes Provide Recorded, Indexed
Knowledge for Future Reference by
Oneself and Other Colleagues

The screenshot displays the DocuTSS software interface. The main window shows a patent document titled "Aurigin Smart Patent Document being annotated". The document content includes a "BIBLIOGRAPHY" section with references to US patents and a "METHOD" section. Annotations are visible in the right margin, including a note about "Patent Being Annotated" and a "New Document Annotation" window. The interface includes a menu bar, a toolbar, and a status bar.

Implication: The "Document Trail" of the Invention Is Started at the
Same Time the Idea Is Researched, Giving Early Priority Dates.

00/040-1954560

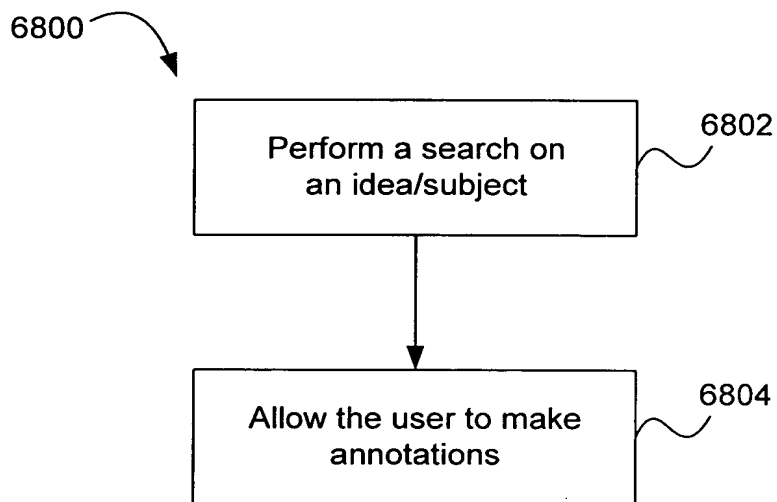


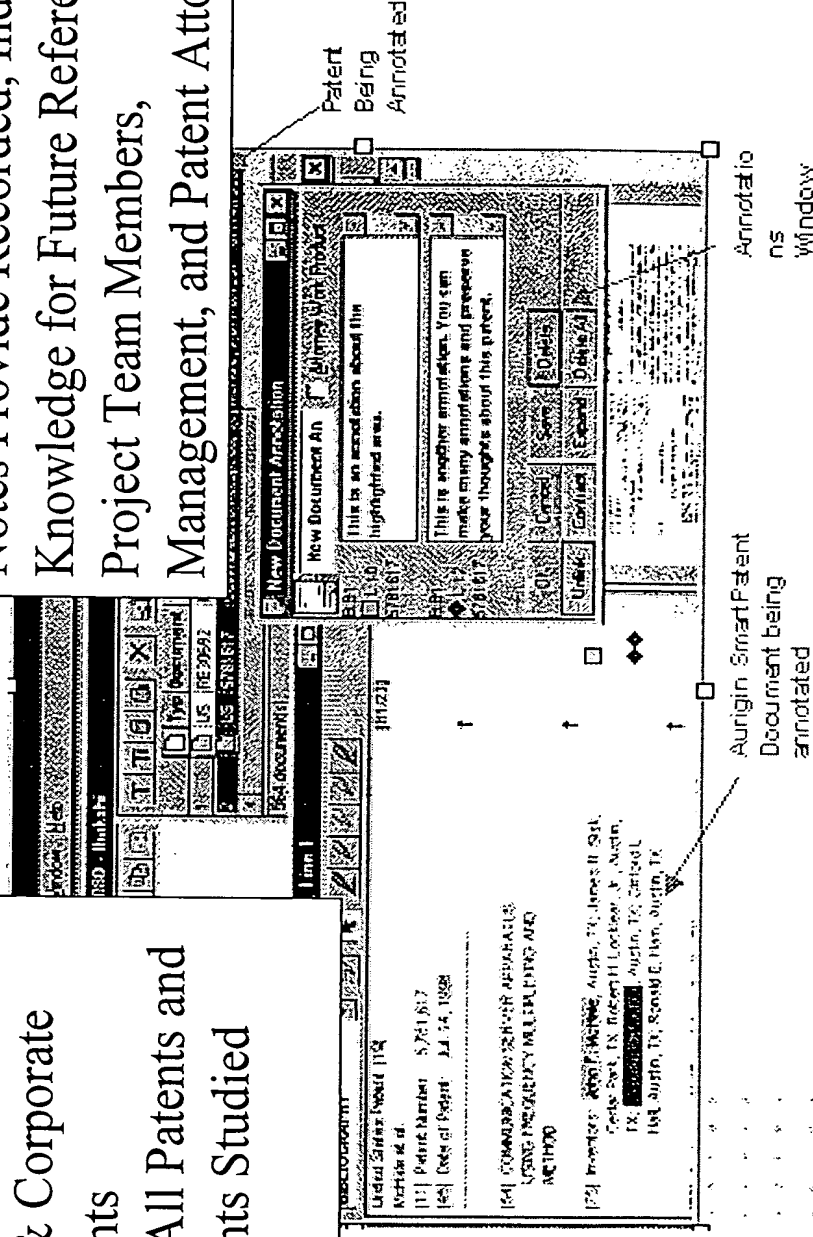
FIG. 68

Tool #20

Notes to Document Thoughts and Analysis

Created By: Annotating
Patents & Corporate
Documents
Group: All Patents and
Documents Studied

Notes Provide Recorded, Indexed
Knowledge for Future Reference by
Project Team Members,
Management, and Patent Attorney.



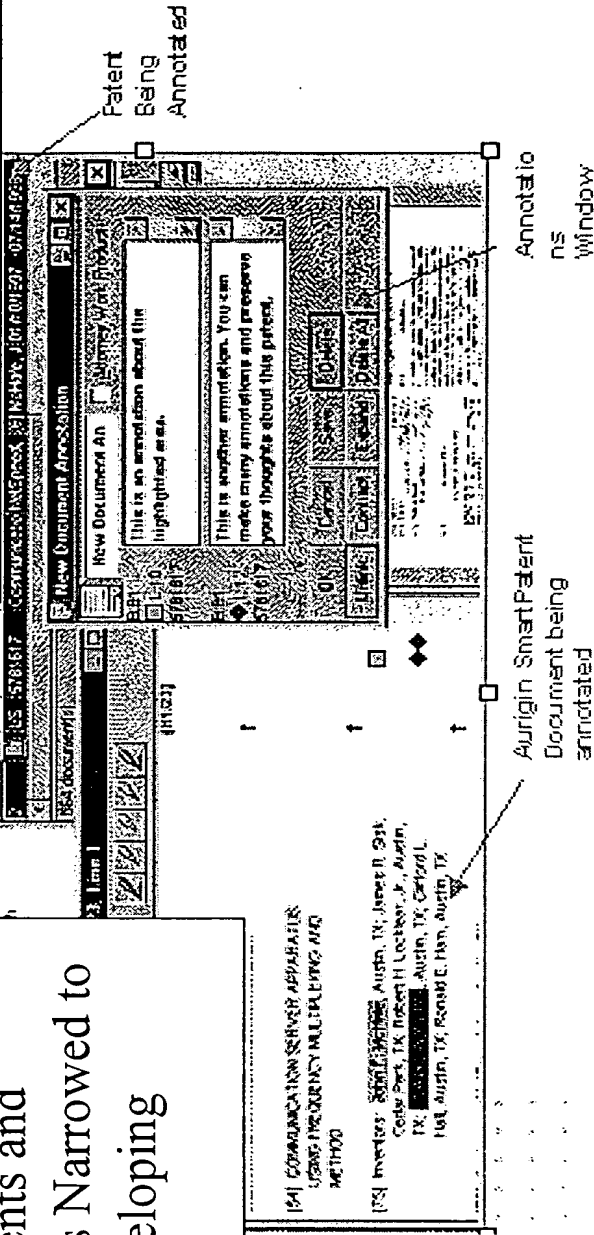
Implication: Documentation of Continuous Effort to Reduce the Idea to
Practice and Obtain Patent Protection Is Created.

002040-19551560 Tool #50

Notes to Document Thoughts and Support U.S. Patent Prosecution and Foreign Filings

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Patents & Corporate
Documents
Group: Patents and
Applications Narrowed to
Reflect Developing
Product

Notes Provide Recorded, Indexed
Knowledge for Reference by
Inventors and Patent Attorney.



Recorded, Indexed Knowledge Used for Expedient Patent
Application Preparation, Reducing Cost and Time

Tool #55

Notes to Document Meeting Thoughts and Analysis

1998 PROGRAM PORTFOLIO

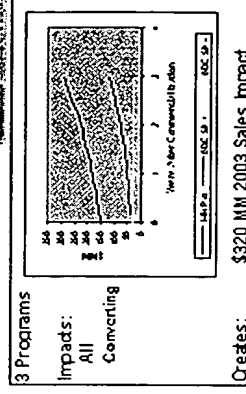
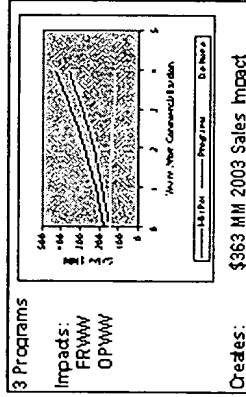
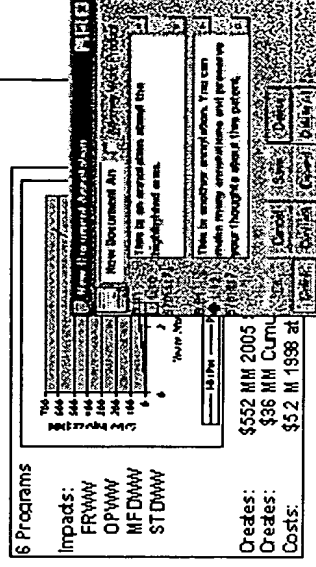
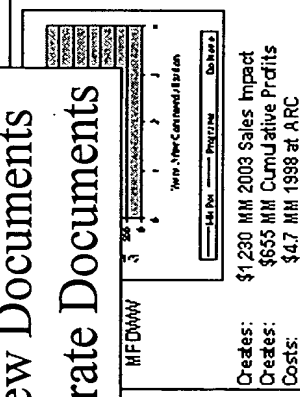
Created by: Annotating

Portfolio Review Documents

Group: Corporate Documents

ity

Requires New Mfg/Sales Capability



Annotations Provide Recorded, Indexed Knowledge for Future Reference by Project and Portfolio Review Teams

Implication: Decision Assumptions Available for Future Reviews Improves Decision Quality

Filing Date:

Text Search:

☒ Use Natural Language Expansion

Search in:

- ☒ Entire Document
- ☐ Abstract Only
- ☐ Claims Only

FIG. 75